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John Henry Comstock Anna Botsford Comstock

ENTOMOLOGICAL NEWS

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North American Institutions featuring Lepidoptera.
XIII. Cornell University, Ithaca, New York.

By J. D. GUNDER, Pasadena, California.

(Plates X, XI and XII).

If you know of young men or young women who really seem interested in entomology and who would like to make that science their life work, advise them to prepare for the New York State College of Agriculture of Cornell University at Ithaca, New York. There is no better school in America, or for that matter in Europe, where students will receive that specialized instruction and that ultimate prestige which the "trained" entomologist of the future must surely have. Whether the student's respective career leads to economic or systematic investigation, the laboratory or professorship, Cornell University offers the most in educational facilities, both in physical equipment and in personnel of faculty.

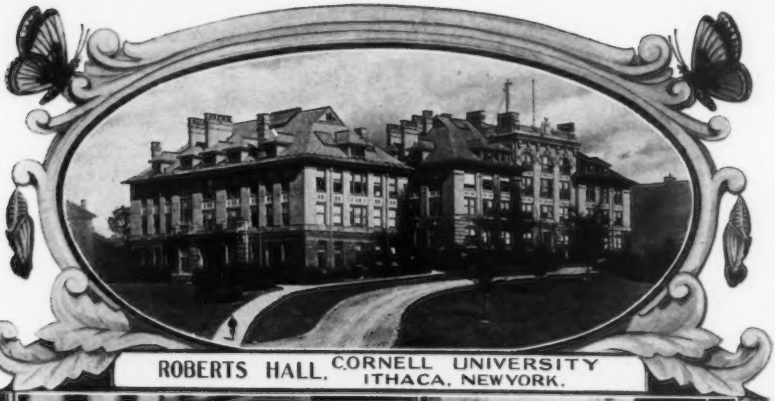
Ithaca is in the central-western part of New York State, easily accessible by railroad, and the University campus, which is just outside of town, occupies a picturesque site of about fifteen hundred acres in a hilly region overlooking Lake Cayuga. The campus itself is really a city of fine buildings composing the various colleges and schools which go to make up the University. Of note is the Library Building with its many fine individual collections of books. Other structures include, the Boardman Hall, Stimson Hall, Sibley College, Morse Hall of Chemistry, the Rockefeller Hall of Physics, the Willard Straight Hall and the buildings of the College of Agriculture, two of which are shown in the circle at the top of plate XI. There are about nine hundred persons on the University's teaching staff and last year the student enrollment was over five thousand.

Ezra Cornell (1807-74), an American business man, founded the University in 1868. He was born in Westchester, New York, of Quaker parentage, his father being a farmer and a

maker of pottery by trade. Ezra was industrious and besides learning the potter's trade, taught school in the district. For a while he worked as a carpenter and also managed a flour mill. About that time an initial telegraph line was being installed between Washington and Baltimore and young Ezra invented a digging machine for laying the wires underground. Although the machine was a success, the system didn't work because electric insulation under the soil wasn't understood, so he proposed stringing the wires on poles. His idea, original at the time, was approved and Mr. Cornell became a contractor for the company and entered business on a big scale, making his first real money. In 1855 he was instrumental in forming the Western Union Telegraph Company. Having accumulated a very comfortable fortune by this time, he decided to retire from commercial life and revert to farming on a huge scale. Thus in 1858 he bought the land outside of Ithaca which was shortly to become the site of the University. Through politics he assembled certain United States and State land grants as a unit and by careful sales succeeded in getting the money all assigned to one institution of learning and that institution he founded on his farm as the Cornell University. At the same time he made a personal gift of $500,000 towards buildings and thus the school was opened in 1868. Andrew D. White was the first president and remained in that position for twenty years. Fortunately Dr. White was a very able educator and worked unceasingly for the future of the school.

Although Cornell University continues to grow and now consists of eight well known colleges and the Graduate School, still its principal college, in fact, is the College of Agriculture and the Agriculture Department has always stood in the most preferred relation with the State of New York which made possible the erection of its best buildings in 1904. This is in entire accord with the wishes of the founder. Students of Agriculture who are residents of the State pay no tuition fees.

Definite entomological instruction and research were begun at the College of Agriculture in 1874 with the appointment of John Henry Comstock. A fairly recent photograph of Mr. and Mrs. Comstock is reproduced on plate X. Prof. Comstock is often referred to as America's Dean of Entomology and certainly his original work and devotion to that science merit



ROBERTS HALL. CORNELL UNIVERSITY ITHACA, NEW YORK.

A. B. KLOTS DR. W. T. M. FORBES A. G. RICHARDS, Jr.

the title. He was born in Janesville, Wisconsin, February 24, 1849, graduating from Cornell in 1874, where he was appointed instructor in the same year. For two years he was United States Entomologist at Washington (1879-81) and held the post of Professor of Entomology and Invertebrate Zoology at the University from 1882 to 1914, when he retired as Emeritus. His principal works on entomology are: *A Manual for the Study of Insects, Introduction to Entomology, Insect Life, Notes on Entomology, Report on Cotton Insects, How to Know the Butterflies* (With Mrs. Comstock), *The Spider Book* and *The Wings of Insects.* He is also the author of numerous shorter papers.

Mrs. Comstock, better known as Anna Botsford Comstock, is almost as well known entomologically as her husband. Besides being a talented artist of natural history subjects, she is a wood engraver of note, having exhibited at the Chicago Fair in 1893 and the Paris Exposition in 1900. At the Buffalo Exposition in 1901, her work in wood engraving was awarded the Bronze Medal. In 1923 Mrs. Comstock was chosen by the National League of Women Voters as one of the twelve greatest living American women. Her published works include: *Ways of the Six Footed, Handbook of Nature Study, How to Keep Bees, The Pet Book* and *Bird, Animal, Tree and Plant Notebooks.*

The entomological activities of the University center around Roberts Hall and the class rooms and insect collections (third and fourth floors) are all in this building and the two immediately joining. Cornell has an enviable staff of well known instructors for entomology and the various professors seem especially interested in a variety of different insect orders in which much personal research work is being accomplished as time permits. Some of the older members of the faculty and their specialties are: J. G. Needham, Ph.D., Litt.D., D.Sc., Aquatic insects and Odonata; G. W. Herrick, B.A.S., Thysanoptera; C. R. Crosby, A.B., Arachnida; O. A. Johannsen, Ph.D., Diptera; J. C. Bradley, Ph.D., Hymenoptera; Robert Matheson, Ph.D., Siphonoptera, etc.; P. W. Claassen, Ph.D., Plecoptera; L. P. Wehrle, Ph.D., Economic Entomology; W. T. M. Forbes, Ph. D., Lepidoptera, and G. L. Griswold, Ph.D., Injurious Insects.

For a teaching institution the collections of general lepidoptera are the best in the country. There are seven cabinets and racks holding about 900 drawers in which it is estimated there are over 50,000 mounted specimens. The butterflies of New York and northeastern United States are well represented and the moth collection is fairly large. A good deal of the material of Foulks, Murtfeldt and Fassl is accessible; much is still untouched in papers and on cotton. By far the best worked-up groups are those from South America where Dr. Forbes and others have collected and which have been given preferred attention. There are many boxes of small exotic moths collected at light in the tropics yet to be mounted and given temporary classification. Among these should be found much new material. Mr. A. B. Klots has recently been working with some of the Pierids, particularly *Erema,* and thus this family is in very fine shape. Colleges where entomology is taught need good collections of insects; however, it is not necessary that type specimens be retained.

Plate XI shows Dr. Forbes and the College's two students who at present are taking major work in Lepidoptera. Both Mr. Klots and Mr. Richards are promising young entomologists. Dr. Forbes was born in Westborough, Massachusetts, and attended Amherst, Cornell and Clark Colleges. He made an extensive trip through Asia Minor in 1907 and has twice visited countries in South America (1920 and 1927) for purposes of collecting and studying exotic Lepidoptera. The Doctor possesses a good private collection of European butterflies. His most recent extensive work was *The Lepidoptera of New York* which is a Cornell publication, memoir 68.

A great deal has been written in the NEWS and elsewhere about the Fourth International Congress of Entomology which met at Cornell in 1928 between August 12th and 18th, but I thought a reproduction of the official photograph of the delegates might be of interest in this connection. A somewhat similar picture was published in the October, 1928, *Journal of Economic Entomology* and I am indebted to that publication for my copy of the key to names. Only two names are omitted on the plate, being unknown to this author up to the time of going to press.

Notes on Coleoptera—No. 2.

By J. N. KNULL, Pennsylvania Bureau of Plant Industry.

(Continued from page 86.)

ANOPLODERA MUTABILIS Newn. Reared from partly decayed wood of alder (*Alnus rugosa*), large-toothed aspen (*Populus grandidentata*) and tulip poplar (*Liriodendron tulipifera*) collected in Clark's Valley.

A. PROXIMA Say. Reared from the dead decayed wood on the inside of a hollow sour gum (*Nyssa sylvatica*) collected at Hummelstown, Pennsylvania.

MOLORCHUS BIMACULATUS Say. Adults were reared from dead witch hazel (*Hamamelis virginiana*) collected at Rockville, Pennsylvania.

MOLORCHUS BIMACULATUS **celti** new subspecies.

A *Molorchus* was found breeding in hackberry (*Celtis occidentalis*) which seems to differ materially from the specimens of *Molorchus bimaculatus* collected and reared from other hosts in the same vicinity. The adults are much larger in size than those reared from many other hosts, although the branches in which these were breeding were no larger. The adults vary in length from 8 to 11.5 mm.

As compared with *Molorchus bimaculatus*, the antennae are relatively longer in the type male, pronotum longer and more nearly cylindrical, apices of elytra more broadly rounded, punctures of pronotum and elytra much finer, pubescence of entire insect longer and more dense. Length 11 mm., width 2.5 mm.

Described from a series in the collection of the writer which were chopped from the sapwood of dead hackberry (*Celtis occidentalis*) branches and one specimen from the sapwood of dead redbud (*Cercis canadensis*) collected at Hummelstown, Pennsylvania, in December. Type in the writer's collection. The adults mature in the fall and pass the winter in their pupal cells.

PHYSOCNEMUM VIOLACEIPENNE Ham. This species was reared from dead white oak (*Quercus alba*) branches from an inch to two inches in diameter collected in Clark's Valley. The dead branches were attached to the living trees and had died the previous spring. The larvae work beneath the bark parallel with the grain and pupate in the sapwood.

RHAPOLOPUS SANGUINICOLLIS Horn. At Laporte, Pennsylvania, this species was found breeding in living fire cherry (*Prunus pennsylvanica*). Many trees had been killed by the work of this insect. The adults were quite numerous on the trunks of the infested trees during the warm parts of the days in the latter part of June.

NEOCLYTUS ACUMINATUS Fab. Reared from dead linden (*Tilia americana*) collected in Clark's Valley.

ANTHOBOSCUS RURICOLA Oliv. Adults were reared from dead alder (*Alnus rugosa*) collected in Clark's Valley.

EUDERCES PICIPES Fab. Reared from dead branches of post oak (*Quercus stellata*) collected in Clark's Valley.

ASTYLOPSIS MACULA Say. Adults were reared from the dead wood of the following trees collected in Clark's Valley: poison ivy (*Rhus toxicodendron*), witch hazel (*Hamamelis virginiana*) and black walnut (*Juglans nigra.*).

LEIOPUS VARIEGATUS Hald. Reared from dead poison ivy (*Rhus toxicodendron*) collected at Harrisburg, Pennsylvania.

LEPTURGES SIGNATUS Lec. Reared from dead white oak (*Quercus alba*) collected in Clark's Valley.

L. QUERCI Fitch. Reared from dead white oak (*Quercus alba*) branches collected in Clark's Valley.

EUPOGONIUS VESTITUS Say. Was reared from dead branches of walnut (*Juglans nigra*) and witch hazel (*Hamamelis virginiana*) collected at Hummelstown, Pennsylvania.

HIPPOPSIS LEMNISCATA Fab. Found breeding in the stems of living daisy fleabane (*Erigeron ramosus*) at Rutherford, Pennsylvania.

ANTHRIBIDAE.

EUSPHYRUS WALSHI Lec. Reared from dead poison ivy (*Rhus toxicodendron*) collected at Harrisburg, Pennsylvania.

CURCULIONIDAE.

LAEMOSACCUS PLAGIATUS Fab. Reared from dead post oak (*Quercus stellata*) branches collected in Clark's Valley.

SCOLYTIDAE.

ANISANDRUS SAYI Hopk. Living adults were taken in Clark's Valley, on March 29th, from a dead stem of spice bush (*Benzoin aestivale*) which had evidently been killed by this species. Adults were also found working in living large leaved holly (*Ilex monticola*) at Laporte, Pennsylvania, on June 20th. The barkbeetles were determined by Dr. Blackman.

Notes on Several Species of North American Pachygasterinae (Diptera: Stratiomyidae) with the Description of a New Species.*

By FRANK M. HULL, Dickinson, Texas.

The accumulation of material in this group of interesting little flies has led to the following notes upon them, together with the description of new species of *Neopachygaster*. All of these species referred to below belong to the group with "unspined scutellum". The habits of the subfamily are unusually interesting. In late spring and early summer they seem to manifest a predilection for windows. I have frequently collected them in laboratories, street cars in the heart of a city, railroad coaches, etc. They are more usually found about deep woods near rotten logs and at such places they may be swept up from the grass.

ZABRACHIA POLITA Coq. A male and a female. A. and M. College, Mississippi, April 8th, 1922 (E. W. Stafford), and May 12, 1920 (F. M. Hull). Taken on windows and by sweeping.

NEOPACHYGASTER MACULICORNIS Hine. A number of specimens of both sexes, from A. and M. College, Mississippi, May 19, 1920 (E. W. Stafford, F. M. Hull); Columbus, Ohio, May 30, 1923 (F. M. Hull). Taken on windows only. The male of this species has dichoptic eyes. The sexes are readily distinguished by the differently colored pile of the thorax; in the male silvery, in the female more golden yellow.

Neopachygaster vitreus n. sp.

This species differs from *N. maculicornis*, the only other described North American species in the uniform shining black color and size. The argenteus scales of that species completely lacking.

♂. Length 2.3 mm. On account of the furcate third vein, subglobose third antennal joint, and antennae near the middle of the head in profile, this species goes in to the genus *Neopachygaster*. It shows numerous differences from *N. maculicornis* Hine.

*Contributions from the Plant Lice Laboratory, Texas Agric. Exper. Sta.

Head practically as in that species. Front shining, glossy black, the silvery lateral margins of the eyes extending a short distance above the antennae, and meeting along a median line, to form a hemispherical silvery spot at base of antennae. Proboscis yellow. Antennae pale yellow; third joint somewhat globose, slightly higher than long, conspicuously darkened on the inner side; arista yellowish, blackish on apical half. Head in profile about one-and-one-half times higher than long. Antennae situated at middle of head in profile, or slightly above.

Thorax black, extremely glossy, covered on the dorsum with sparse, appressed, very silky pile, longer and heavier on the sides behind the humeri, and towards the middle arranged to form three obscure, narrow, median stripes; whole posterior half of dorsum uniformly pilose. Halteres yellow, knobs white. Scutellum rather simple, evenly rounded, shining black with pile similar to that of thorax, placed at an angle of not quite forty-five degrees; rim slightly emarginate at apex; extreme margin with numerous small nodular protuberances, more prominent than in *maculicornis*.

Abdomen short and globose, shining, glossy black, with sparse, pale, appressed, silky pile. Legs pale yellowish; coxae and femora, except bases and apices, shining blackish. Wings hyaline; third vein furcate, veins yellowish.

This specimen will be seen to be somewhat intermediate between *Neopachygaster* and *Eupachygaster* because of the strong prominences on the scutellar rim. A careful examination of *maculicornis* will also reveal small prominences of a similar nature, hence this character is not of importance in separating the two. Otherwise the scutellum is practically of the same shape as *Neopachygaster*. In its small size and shining black color it resembles *Zabrachia polita*. However, the third vein is distinctly furcate.

Type, a male, Ames, Iowa, July 15, 1923 (F. M. Hull). In my own collection.

Eupachygaster punctifer Malloch. Apparently the male has not been taken before, and I append a short description of its essential differences from the female.

♂.—Eyes not quite touching, very narrowly divided. Front and likewise ocellar space triangular. The silvery pilose lateral border of eyes extends entirely up to where the eyes approach nearest, not confluent, separated by a narrow, shining black line. Median frontal groove prominent; otherwise head very much as in female.

Thorax quite different from that of the female. There is a broad median stripe or band, of fairly long, thick, appressed, brilliant silvery scale-like hair or pile. On the sides and back of the humeri, this becomes small patches of shorter, silvery scales, or scale-like hair. Halteres dark brown, knobs white. Abdomen and legs practically as in the female.

Type and one paratype in my collection. A number of specimens from MISSISSIPPI A. and M. College on the following dates: May 19 and 20, 1922, and April 28, 1920 (F. M. Hull).

There will thus be seen a rather striking resemblance to the male of *Neopachygaster maculicornis,* in the wide silvery band of the thorax; however, the holoptic eyes and different scutellum readily separate the two.

EUPACHYGASTER HENSHAWI Malloch. I have a single specimen that I formerly held to be an undescribed form and which appears to belong here. The following notes are included for comparison.

♀.—Front shining black. The silvery lateral margins of the eyes do not extend as far above the antennae as in *punctifer.* A median band, of short recumbent, slightly yellowish pile, begins where they leave off, divides at the ocelli, and extends beyond them, the pilose area divided in its entire length by a slender groove. This is equivalent to the M-shaped mark described by Malloch in *punctifer,* and in my specimens of that species it does not extend past the ocelli. First and second joints of antennae yellow; third orange, not so dark on inner side as in *punctifer,* about one-and-one-half times broader than long, and longer below, on the inner side; pubescence of annuli silvery and with a bead-like appearance; arista reddish at base, brownish apically (white in *punctifer*), and very short pubescent and much slenderer than in *punctifer.* Face dark grayish, more or less opaque.

Thorax opaque black, obscurely punctate on the greater, median part of dorsum, and from which proceeds short appressed, sparse, silky pile, somewhat yellowish in color. The silver, scale-like hairs are confined to a narrow median line, and to five or six rather regular rows, on outer side of dorsum between the humeri and base of wing. Halteres yellow, knobs white. Scutellum with similar punctures and pile as in *punctifer,* but with the preapical hump or bulge, very much less prominent.

Abdomen glossy, vitreous black, with pale, sparse, short appressed pile, but with none of the silver, scale-like hairs as

found in *punctifer*. Legs pale yellow, coxae brownish, femora, all but bases and apices, shining black. Wings hyaline; third vein furcate.

One female, A. and M. College, MISSISSIPPI, April 29, 1922 (F. M. Hull).

JOHNSONOMYIA ALDRICHI Malloch. A number of specimens of both sexes from several localities. A. and M. College, MISSISSIPPI, April 13, 1922 (F. M. Hull). Ames, IOWA, June 20, 1923, and Columbus, OHIO, June 2, 1923 (F. M. Hull). Collected both on windows and by sweeping. The above specimens agree well with the description. However, in the latter, there is no mention of a fairly distinct striped arrangement of the pile of the thorax. In my specimens three median stripes are easily discernible.

PACHYGASTER PULCHER Lw. Several specimens, both sexes, loaned by Professor J. S. Hine, seem to be this species. They agree well with the description, although the latter seems deficient on one or two points. It does not mention a slight bluish reflection apparent in the material before me. Moreover, in this series, the abdomen, especially in the male, is somewhat more elongate than is common among other members of the group. The above mentioned specimens were from Atherton, MISSOURI, May 25, 1922 (C. F. Adams) and Madison WISCONSIN, June 3, 1919 (A. C. Burrill).

The Preservation of Lepidopterous Larvae by Injection.

By A. C. COLE, JR., Ohio State University, Columbus, Ohio.

I have found, in the preparation of Lepidopterous larvae for display purposes in dry mounts, that the use of the methods listed below gave approximately 100% insurance against their destruction by museum pests, and in most cases caused the larvae to retain their original shapes.

I. INJECTING WITH THE VISCERA INTACT.

Fill a hypodermic syringe with one of the fluids specified below, being sure to use the needle indicated under the fluid.

Enter the needle into the anus being very careful not to puncture the wall of the intestine too near the opening. The wall must be punctured, however, as near the center of the larva as possible, and the needle thrust into the body cavity. As soon as the point of the needle is as far anterior as possible, inject the fluid into the body cavity, and extract the needle slowly. When the larva contains as much of the material as necessary withdraw the needle completely.

Most of the substances listed below will not exude from the opening if the correct needle is used. In case this happens, however, it will be necessary to plug the opening temporarily as soon as the needle is withdrawn.

Injection, due to the pressure of the fluid and the amount used, lengthens the larva considerably. During the process of hardening, however, the larva will again become nearly its normal size, due to a partial shrinking of the body-wall, around the internal organs. Those fluids which do not allow this shrinking or those which produce "over-shrinkage"* should be avoided.

The following fluids may be used:

Collodion—Use a needle with a medium diameter. Excellent results are produced. There is no apparent over-shrinking and no distinct discoloration. The resulting specimen is firm and quite life-like in appearance.

Formalin (40%)—Use a needle with a small diameter. Good results are obtained. There is a slight discoloration and over-shrinking.

Celluloid dissolved in acetone—Use a needle with a large diameter. This is quite difficult to inject due to its viscosity. It produces irregularity in the shape of the larva. There is no apparent discoloration and no shriveling.

II. Injecting with viscera removed.

The viscera are best removed by cutting a small slit at the extreme posterior end of the larva and rolling a glass tube anterio-posteriorly on the body. As soon as the viscera have

*By overshrinking is meant the shrinking of the skin of the larva to such an extent that it is out of proportion to that of the living insect.

been removed the inside of the larva should be thoroughly washed with water. The specimen may then be injected with one of the fluids listed below.

Melted paraffin—A needle with a large diameter must be used. This material produces excellent results. Care must be taken, however, that the paraffin is not so hot that it scorches the tissue or discoloration will result.

Formalin and Plaster of Paris—Use a needle with a large diameter, or a medicine-dropper in this case. The results are very good, but the best results are obtained on large larvae. The formalin (40%) and plaster of Paris are mixed into a thin paste. This paste hardens in a short period and the work therefore must be done rapidly.

Celluloid dissolved in acetone—Use a needle with a large diameter. The results are quite good, although a slight overshrinking follows.

It must be noted that none of these fluids will prevent discoloration completely, nor will the brighter colors of the larvae be preserved entirely. Some, however, tend to discolor more than others and this must be correlated with the preserving power of the fluids.

On a Family of Coleoptera new to the Fauna of North America with Description of One New Species (Gnostidae).

By W. S. Blatchley, Indianapolis, Indiana.

On March 7, 1927, while collecting two miles east of Dunedin, Florida, I beat into an umbrella, from a large mass of Spanish moss attached to the limb of a dead pine snag, a small brown beetle which I at once recognized as new to my collection. On examining it closely that evening I found that I could not place it definitely in any of the known families of North American Coleoptera. It had but three segments in each antenna and resembled somewhat some of the Pselaphids belonging to the genera *Adranes* and *Fustiger*, but the tarsi were 5-jointed and the elytra entire and covering the abdomen.

On returning to Indianapolis in April I again gave it careful study, but was unable to identify it from any of the literature in my library. I then sent it to H. C. Fall, of Tyngsboro, Massachusetts, and later to Chas. Schaeffer, of Brooklyn, New York, two of the best Coleopterists in eastern North America, but both of them passed it up as a "strange and aberrant form," wholly unknown to them even as to family. Both suggested that the antennae had been broken off, leaving only the basal segments remaining, but this I doubted, as they had every appearance of being in normal condition.

In August, 1929, I took the specimen with me to New York City and showed it to Chas. W. Leng and A. J. Mutchler, but they could only guess as to its family relationships. Mr. H. S. Barber, of the U. S. National Museum, happened at that time to be at the Brooklyn Museum and as I had the specimen in a box with others which I wished to compare with those in the Schaeffer collection, I showed it to him. He at once recognized it as belonging to the family Gnostidae, as he had recently seen examples of that family taken by Dr. Wm. M. Mann from the nests of ants in the Panama Canal Zone. By referring to the available literature at hand, we soon found that it belonged to the genus *Gnostus* founded by Westwood in 1855,[1] the genotype being *G. formicicola* Westw., taken by Henry Walter Bates from the nest of an ant, *Myrmica* (*Crematogaster*) *victima* Smith, near Santarem,[2] Brazil. Of this ant and beetle Bates, the collector, wrote: "The ant, neuter and female, had its formicarium formed in hollow, dried suspended sipos;[3] only one female in each formicarium. This ant has a small species of beetle (Paussidae) almost invariably in its company, one or at most two, in each colony. No beetle was found in any part of the sipos not inhabited by the Myrmica."

One other species of the genus, viz., *Gnostus meinerti* Wasmann, has since been described[4] from Valencia, Venezuela. It was found in the nest of the ant, *Crematogaster limata* Sm. Wasmann gives characters showing that it is very different from

[1] Trans. Entom. Soc. Lond., III, 1855, p. 90, pl. 8.
[2] A city on the Amazon, about half way up the river to Manaos.
[3] A kind of vine.
[4] Krit. Verzeichniss der Myrmekophilen und Termitophilen Arthropoden, Berlin, 1894, p. 216.

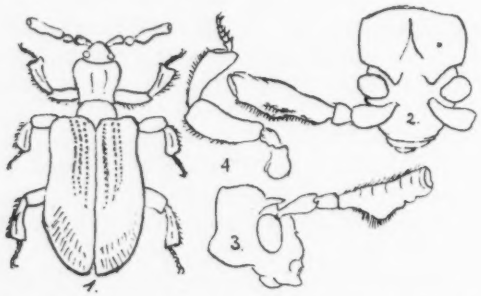
Westwood's species, as well as from the one found in Florida.

Westwood's long Latin diagnosis of the genus *Gnostus* includes also the structural characters of his species, *G. formicicola*. Freely translated, the principal characters of genus and species as given by him are as follows, those portions pertaining to the antennae and prothorax being included verbatim in the original Latin:

"Body minute, convex. Head small, immersed in thorax to the eyes, anteriorly rounded, subporrect.

"Antennae paullo ante angulos internos oculorum insertae, pronoto breviores subcylindricae; articulo 1mo subclavato, curvato, apice oblique truncato, articulo 2ndo in angulum inferum truncaturae apicalis articuli basalis inserto, basi gracili supra in angulum subacutum producto, articulo 3tio elongato, cylindrico apice truncato, subtus fere ad medium in angulum obtusum producto; hoc articulo, certo situ, quasi ex articulis sex arctissime conjunctis apparenti.

"Labrum small, transverse, angulate-produced in front. Maxillae minute, not bilobed; maxillary palpi 3-jointed, joint 3 largest, its middle slightly oval-inflated, apex acute. Labial palpi minute, 3-jointed, joint 1 annuliform; 2 curved, attenuate; 3 oval, apex subacute without setae.



1. *Gnostus formicicola* Westw.; 2, head from above; 3, head from the side; 4, front-leg. (After Westwood. Courtesy of Chas. W. Leng.)

"Prothorax oblongus, quasi in duas partes valde inaequales (postica multo minori) impressione divisus, pars antica capite multo latior; fossulis duobus paullo curvatis, longitudinalibus in discum notatus, lateribus rotundatis, in parte constricta

utrinque in hamos duos apicibus acutis fere conjunctis productis; parte postica transversa fere anticae latitudine aequali.

"Elytra large, more than twice the width of thorax, humeral angles rectangular, sides subparallel, tips rounded covering the abdomen; disc convex, glabrous, slightly setose, punctate-striate. Legs short, femora subclavate, tibiae compressed, slightly curved; tarsi short, all simple 5-jointed, joint 5 slightly the longer, slender. Abdomen with three visible segments, segment 1 very large, 2 very short, 3 medium, subtriangular."

The brief Latin description of his genotype is as follows:

"*Gnostus formicicola* Westw. Omino rufo-castaneus, nitidus, corpore et pronoto glabris; elytris punctato-striatis, corpore infra polito impunctato convexo. Long. corp. lin. 1 = 1/12 unc. = 2 mm."

The specimen taken by me in Florida apparently differs from Westwood's species in characters pertaining to the antennae, and in the sculpture of thorax and elytra. It is therefore described as follows:

Gnostus floridanus sp. nov.

Oblong, subcylindrical. Uniform dark reddish-brown, strongly shining. Antennae much as described by Westwood, the joints with fine scattered setae; joint 2 subglobose, one-half the length of 1; joint 3 as long as 1 and 2 united, gradually but feebly clavate, its apex truncate and under side with a very slight submedian angulation. Front lobe of prothorax with a wide and deep median groove lying between two very distinct, feebly divergent dorsal ridges, the posterior ends of these ridges thickened and projecting over the feeble transverse impression separating the two lobes of thorax. Elytra about three-fourths wider than front lobe of thorax; umbones prominent; disc without striae but with rows of very small scarcely impressed punctures, each puncture bearing a very fine short inclined yellowish seta, both punctures and setae visible only under high magnification. Length 1.6 mm.

Type a unique (sex undetermined) in the author's collection, taken near Dunedin, Florida, March 7, 1927.

Search for additional specimens in ants' nests and by beating other bunches of Spanish moss in the immediate vicinity of the type habitat has so far failed.

I have been unable as yet to definitely ascertain who first used the family name Gnostidae for the genus *Gnostus*.

Nathan Banks, who kindly looked up the matter for me, states that: "Very possibly it is due to Gemminger and Von Harold, in vol. I, of their Catalogue, 1868, p. 700." However, they there did not characterize the family but used the name Gnostidae as a family heading and placed under it three genera, viz., *Ectrephes* Pascoe; *Gnostus* Westwood and *Anapestus* King. King's name is now considered a synonym of *Ectrephes* and for this the family name Ectrephidae is now used, thus leaving *Gnostus* alone in Gnostidae.

Westwood, in the notes following his original characterization, after showing that *Gnostus* could not belong to the Paussidae, where it was originally placed by Bates adds: "Its nearest allies appear to be found amongst some of those Xylophaga of Latreille which possess 5-jointed tarsi, but it stands sufficiently detached from the whole of them as to constitute a distinct subfamily of its own." However, he gives neither a subfamily nor family name.

Muscina stabulans Fall. (Diptera: Muscidae) Parasitic on Arachnara subcarnea Kell. (Lepidop.: Noctuidae).

At Toledo, Ohio on July 27, 1928 the author collected a pupa of *Arachnara subcarnea* Kell, in a stalk of *Typha latifolia,* which appeared to be parasitized. Two parasitic larvae emerged from the pupa on Aug. 11 and pupated externally, one emerging on Aug. 19 and the other on Aug. 20. These adults were determined by Dr. J. M. Aldrich of the U. S. National Museum at Washington as *Muscina stabulans* Fall. (The stable fly.)

The host pupa appeared in the stalk at the end of its larval burrow, about four inches under the surface of the water.

The author has observed on several occasions adult *Muscina stabulans* flying around *Typha latifolia* infested with *Arachnara subcarnea* but egg-laying was not observed. Inasmuch as the host larvae enter the *Typha* leaves at the tip, it is entirely possible that they were parasitized in this instar.

I believe this is the first recorded observation of a distinct parasitic habit of *Muscina stabulans,* and rearing experiments with this host should prove interesting.

Both the adult parasites and their pupal cases are now in my personal collection. —A. C. Cole, Jr., Ohio State University, Columbus, Ohio.

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396. F. S. Blanton
397. A. L. Treadwell
398. M. W. Blackman
399. F. C. Craighead
400. Wm. T. Davis
401. Ray L. Taylor
402. L. G. Gentner
403. A. L. Melander
404. Mrs. Melander
405. C. W. Johnson
406. H. L. Parten
407. R. R. Parker
408. C. O. Bare
409. S. Hadwen
410. O. C. McBride
411. J. M. Aldrich
412. J. L. Horsfall
413. Ann Morgan
414. Miss Cattell
415. Jacques Cattell
416. A. E. Stene
417. J. McK. Cattell
418. W. E. Rumsey
419. Wm. H. Gurney
420. C. S. Thompson
421. Carryl Haskins
422. Mrs. Haskins
423. Curtis Benton
424. G. Maheux
425. E. J. Hambleton
426. Geo. A. Dean
427. G. H. Lamson, Jr.
428. Leroy Childs
429. Harry S. Smith
430. F. W. Pettey
431. A. F. Burgess
432. J. S. Wade
433. Wm. J. Gerhard
434. R. M. Geist
435. C. A. Thomas
436. Henry Dietrich
437. Mrs. Baker
438. A. W. Baker
439. Herbert Ruckes
440. Mrs. Ruckes
441. H. J. Quale
442. V. R. Haber
443. B. A. Porter
444. P. G. Mundinger

The Crambinae in the Brackenridge Clemens Memorial Collection of the Academy of Natural Sciences of Philadelphia[1] (Lepidoptera: Pyralidae).

By FRANK HAIMBACH, Academy of Natural Sciences, Philadelphia.

This paper deals especially with the North American species, which are represented in our collection by approximately two-thirds of the known species. A list of European species contained in our collection is also given. The tropical and neotropical species in our collection have not yet been studied by us.

We are desirous of building up our collection of Microlepidoptera, and this paper is the first of a series which will show to other Institutions and specialists just what we have, and from which it will be easy to see what we lack, and we invite correspondence with anyone who can furnish us with any species or sub-species which are not represented in our collection, with the view of obtaining such forms either by exchange or otherwise.

For specimens of like value we will give paratypes and other typical material in exchange.

We are citing in this paper all the types in our collection of forms here dealt with, including the designation of a number of forms of which we have selected single types (lectotypes) from larger series of cotypes. We have also noted all paratypes as well as specimens compared with types, and by whom compared.

Students of this group, as well as other groups which have been studied by us, are invited to consult our collections, and material sent to us for determination will be promptly returned, retaining only such species which are new to our collection.

The sequence of species and nomenclature here used, is that of Barnes and McDunnough's List[2], with such changes as were made by Dyar and Heinrich[3] and the elimination of the genera

[1] Published by the aid of the Brackenridge Clemens Memorial Fund.

[2] Check List of the Lepidoptera of Boreal America, Decatur, Illinois, 1917.

[3] The American Moths of the genus Diatraea and allies, by Harrison G. Dyar and Carl Heinrich. Proceedings of the U. S. National Museum, Vol. 71, pp. 1-48, 1927.

Chalcoela and *Dicymolomia,* which Forbes[4] has placed with the Glaphyriinae.

The European species are arranged according to Arnold Spuler[5], *Die sogenannten Kleinschmetterlinge Europas.*

MESOLIA BABOQUIVARIELLA (Kearfott).

ARIZONA: Nogales, July 4-7, 1903 (E. J. Oslar) [6; compared with type, Kearfott.].

MESOLIA ORACULELLA Kearfott.

ARIZONA: Oracle, July 3, 1905 (E. J. Oslar) [6; Topotypes].

MESOLIA HUACHUCAELLA Kearfott.

ARIZONA: Phoenix, August (Kunze) [♀; Lectotype, A. N. S. P., no. 7189, by present designation]. Globe, August 25 (Kunze) [1; Paratype].

PRIONAPTERYX NEBULIFERA Stephens.

NEW JERSEY: Brown's Mills Junction, July 21, 1907 (E. Daecke); Manumuskin, June 23, 1902 (E. Daecke) [2].

PRIONAPTERYX ACHATINA ZELLER.

NEW JERSEY: Holly Beach, July 10, 1904 (F. Haimbach) [1]. Seaside Park, July 12, 1911 (F. Weigand) [5].

PRIONAPTERYX CUNEOLALIS (Hulst).

NEW JERSEY: Five Mile Beach, July 31 (F. Haimbach) [1]. Wenonah, July 15 and August 24 (F. Haimbach) [2].

EUGROTEA YAVAPAI Kearfott.

ARIZONA: Yavapai County [Lectotype, A. N. S. P., no. 7190, by present designation].

PSEUDOSCHOENOBIUS OPALESCALIS (Hulst).

COLORADO: Clear Creek, July 13, 1914 (E. J. Oslar) [1].
UTAH: Vineyard, May 16 and August 6, 1917 (Tom Spalding) [3].

RAPHIPTERA MINIMELLA (Robinson).

MASSACHUSETTS: Bedford, August 25, 1907 [1].
PENNSYLVANIA: "Penn." [Type, A. N. S. P., no. 7447; same data, 1 Paratype]. Philadelphia, September 5 (F. Haimbach) [1].

[4] The Lepidoptera of New York and Neighboring States. Cornell University Agricultural Station, Memoir 68, 1923.
[5] Stuttgart, 1913.

NEW JERSEY: Lucaston, September 9 and 14 (F. Haimbach) [2]. Wenonah, May 15, 1910 (F. Haimbach) [1]. Cape May Point, July 24, 1915 (F. Haimbach) [1].
FLORIDA: Melbourne, March, 1907 (P. Laurent) [1]. Daytona, March, 1907 (P. Laurent) [1].

RAPHIPTERA ARGILLACEELLA (Packard).

CANADA: Ontario, Mer Bleue, June 22 [1].

CRAMBUS SATRAPELLUS Zincken.

NEW JERSEY: Lucaston, August 17 and September 7 (F. Haimbach) [5]. Wenonah, August 21 (F. Haimbach) [1]. Cape May Point, August 1, 1918 (F. Haimbach) [2].
GEORGIA: Thomasville, April 3, 1903 (M. Hebard) [1].

CRAMBUS HASTIFERELLUS Walker.

NEW JERSEY: Sea Isle City, September 5, 1908 (F. Haimbach) [7]. Anglesea, August 3, 1906 (F. Haimbach) [1]. Holly Beach, July 11 (F. Haimbach) [1].
FLORIDA: Dunedin, February 5, 1927 (W. S. Blatchley) [1]. Daytona, March (P. Laurent) [1].

CRAMBUS HAMELLUS (Thunberg).

CANADA: Manitoba, Cartwright, August 31-September 16, 1910 (J. F. Heath) [10]. British Columbia, Wellington, August 20, 1903 [1].

CRAMBUS CYPRIDALIS Hulst.

WASHINGTON: Pullman, September 27, 1898 (C. V. Piper) [2].
NEW MEXICO: Jemez Mountains, 64-6600 feet, September 9 (J. Woodgate) [10].

CRAMBUS PASCUELLUS (Linnaeus).

MAINE: Greenville, July 21-29, 1919 (F. Haimbach) [2]. Monmouth, June 25-26, 1906 [2].
NEW HAMPSHIRE: New London, June 17-19, 1929 (M. M. Cary) [1].
MASSACHUSETTS: Hyde Park, July 12, 1910 (F. Haimbach) [1].
NORTH CAROLINA: Black Mountains, July 2, 1912 (W. Beutenmuller) [1].
COLORADO: Chimney Gulch, Golden, September 10, 1907 (E. J. Oslar) [3].
UTAH: Vineyard, July 11, 1917 (Tom Spalding) [2].

CRAMBUS LYONSELLUS Haimbach.

NEW YORK: Katonah, West Chester County, July (W. Beutenmuller) [♂; Type A. N. S. P., no. 7182]. Same locality, June (W. Beutenmuller) [Paratype, 1].

CRAMBUS DAECKELLUS Haimbach.

NEW JERSEY: Brown's Mills Junction, May 30, 1906 (E. Daecke) [♀; Type A. N. S. P., no. 7183]. Clementon, May 24, 1908 (F. Haimbach) [1].

CRAMBUS GIRARDELLUS Clemens.

MAINE: Greenville, July 21-29, 1919 (F. Haimbach) [1]. Monmouth, June 26, 1916 (C. A. Frost) [1].

NEW HAMPSHIRE: New London, June 20-July 11; August 10-20 (M. M. Cary) [2].

MASSACHUSETTS: "Mass." (C. Girard) [Type, A. N. S. P., no. 7293]. Hyde Park, July 15, 1910 (F. Haimbach) [1]. Bedford, July 14, 1907 (L. W. Swett) [1].

PENNSYLVANIA: Lower Merion Township, Montgomery County, July 15-28 (F. Haimbach) [2]. Philadelphia, July 12, 1906 (F. Haimbach) [1]. Philadelphia (H. Hornig) [2]. Roxboro, Philadelphia, July 9 and 21 (F. Haimbach) [2]. Fairmount Park, Philadelphia, July 12, 1906 (F. Haimbach) [1]. Clark's Ferry, July 4, 1915 (F. Haimbach) [2]. Weaver, July 21, 1917 (F. Haimbach) [1]. North Mountain, July 17 (H. W. Wenzel) [1].

VIRGINIA: "Va.", ♀ [1].

NORTH CAROLINA: Black Mountains, July 3, 1912 (W. Beutenmuller) [1].

SOUTH DAKOTA: Volga [1].

CRAMBUS LEACHELLUS (Zincken).

PENNSYLVANIA: Philadelphia, July 23 (F. Haimbach) [1]. Broomall, September 18, 1910 (F. Haimbach) [2].

NEW JERSEY: Lucaston, July 9-15 (F. Haimbach) [17].

VIRGINIA: Hot Springs, July 17-21, 1916, at light (M. Hebard) [2].

NEW MEXICO: Jemez Mountains, 6400 feet, July 14, 1917 (J. Woodgate) variety [1].

ILLINOIS: Chicago [1].

CRAMBUS UNISTRIATELLUS Packard.

MAINE: Greenville, July 21-29, 1919 (F. Haimbach) [8].

COLORADO: Denver (E. J. Oslar) [7].

CRAMBUS PRAEFECTELLUS (Zincken).

Crambus involutellus Clemens, without data. [Type, A. N. S. P., no. 7294].

MAINE: Greenville, July 21-29, 1919 (F. Haimbach) [3].

NEW HAMPSHIRE: New London, August 10-September 10, 1928 (M. M. Cary) [2].

MASSACHUSETTS: Framingham, May 9, 1925; June 27 and July 14, 1906 [3]. Everett, August 5, 1901 [1]. Hyde Park, August 22, 1907 (F. Haimbach) [2].

PENNSYLVANIA: Philadelphia, May 18-21, June 1, July 19 (F. Haimbach) [4]. Roxboro, Philadelphia, May 6-18, June 6-21, July 19 (F. Haimbach) [10]. Lower Merion Township, Montgomery County, May 4, 1916, July 26, 1921 (F. Haimbach) [2]. Perkasie, June 16 (F. Haimbach) [1].

NEW JERSEY: Sea Isle City, September 5, 1908 (F. Haimbach) [1]. Five Mile Beach, August 3-12, 1906 (F. Haimbach) [2]. Cape May Point, August 1, 1918 (F. Haimbach) [1]. Lucaston, September 11 (F. Haimbach) [1].

TEXAS: May 22 (no. 22, 1).

CRAMBUS OSLARELLUS Haimbach.

COLORADO: Clear Creek, July 3, 1907 (E. J. Oslar) [♀; Type A. N. S. P., no. 7184]. Same data [♂; Allotype]. Same data [Paratypes, 2].

CRAMBUS YOUNGELLUS Kearfott.

CANADA: Ontario, Mer Bleue, July 3, 1907 (C. H. Young) [Lectotype, A. N. S. P., no. 7191, by present designation].

CRAMBUS BIDENS Zeller.

CANADA: Ottawa, July 13-14, 1906 (C. H. Young) [2].

MAINE: Greenville, July 21-29, 1921 (F. Haimbach) [2].

NEW HAMPSHIRE: New London, August 10-30, 1928 (M. M. Cary) [3].

MASSACHUSETTS: Hyde Park, July 12, 1910 (F. Haimbach) [2].

PENNSYLVANIA: Lower Merion Township, Montgomery County, July 4, 1917 (F. Haimbach) [1].

NEW JERSEY: Wenonah, June 23, 1912 (F. Haimbach) [4].

CRAMBUS ALBOCLAVELLUS Zeller.

MAINE: Greenville, July 21-29, 1921 (F. Haimbach) [2].

NEW HAMPSHIRE: New London, June 17-19, 1929 (M. M. Cary) [1].

MASSACHUSETTS: Bedford, July 14, 1907 (C. W. Frost) [2]. Framingham, July 16, 1906 [1].

NEW YORK: Katonah, Westchester County, June, July, 1915 (W. Beutenmuller) [2].

PENNSYLVANIA: Philadelphia, June 9-25, July 8, 1914 (F. Haimbach) [7]. Roxboro, Philadelphia, June 13-27, July 2-21 (F. Haimbach) [19]. Lower Merion Township, Montgomery County, July 4-29, August 7, 1916 (F. Haimbach) [11]. Swarthmore, July 9, 1924 (E. T. Cresson, Jr.) [1]. Langhorne, July 10-11, 1922 (F. Haimbach) [8]. Weaver, July 21, 1917 (F. Haimbach) [7].

NEW JERSEY: Wenonah, June 23, 1912, July 20 (F. Haimbach) [4]. Cape May Point, July 3-26 (F. Haimbach) [4]. Five Mile Beach, July 31 (F. Haimbach) [1].

NORTH CAROLINA: Black Mountains, July 14-August 10, 1912 (W. Beutenmuller) [4].

CRAMBUS CAROLINELLUS Haimbach.

MARYLAND: Plummers Island, July 21, 1919 (G. M. Greene) [1].

VIRGINIA: Hot Springs, July 17, 1916 (M. Hebard) [1].

WEST VIRGINIA: "W. Va." [3].

NORTH CAROLINA: Black Mountains, July 19, 1912 (W. Beutenmuller) [♂; Type A. N. S. P., no. 7185]. Same location, June 21-July 19, 1912 (W. Beutenmuller) [11 paratypes].

CRAMBUS AGITATELLUS Clemens.

Without data [Type, A. N. S. P., no. 7287].

MAINE: Monmouth, June 26, 1905 [1].

MASSACHUSETTS: Bedford, July 1, 1917 [1].

PENNSYLVANIA: Philadelphia, June 12 (F. Haimbach) [1]. Roxboro, Philadelphia, June 13, 1907, August 11 (F. Haimbach) [11]. Rockville, July 5, 1915 (F. Haimbach) [2]. Clark's Ferry, July 4, 1915 (F. Haimbach) [1].

NEW JERSEY: Wenonah, June 23, 1915 (F. Haimbach) [2].

CRAMBUS MYELLUS (Hübner).

MAINE: Greenville, July 21-29, 1919 (F. Haimbach) [1].

NEW HAMPSHIRE: New London, August 10-September 10, 1928 (M. M. Cary) [2].

CRAMBUS LAQUEATELLUS Clemens.

Without data [Type, A. N. S. P., no. 7295].

MASSACHUSETTS: Framingham, June 5-10, 1906 (C. A. Frost) [2].

PENNSYLVANIA: Philadelphia, May 14-18 (F. Haimbach) [3]. Roxboro, Philadelphia, May 19-June 9 (F. Haimbach) [13]. Lower Merion Township, Montgomery County, May 28-31 (F. Haimbach) [2]. Buckmanville, Bucks County, May 21-22 (F. Haimbach) [4]. Toughkenamon, Chester County, May 29-31 (E. G. Vanatta) [2].

NEW JERSEY: Wenonah, May 24 (F. Haimbach) [1].

OHIO: Cleveland [1].

CRAMBUS MULTILINEELLUS Fernald.

FLORIDA: "Fla." [1].

CRAMBUS HORTUELLUS (Hübner).

MAINE: Greenville, July 21-29, 1919 (F. Haimbach) [2]. Monmouth, July 1, 1905 [1].

MASSACHUSETTS: Hyde Park, July 8-12, 1910, and August 22, 1907 (F. Haimbach) [5]. Framingham, July 11, 1906 (C. A. Frost) [1]. Bedford, July 1, 1907 [1].

PENNSYLVANIA: Philadelphia, July 5-8, 1914 (F. Haimbach) [2]. Lower Merion Township, Montgomery County, July 29, 1916 (F. Haimbach) [1].

NEW JERSEY: Jamesburg, July 4 (F. Haimbach) [1]. Brown's Mills Junction, June 27, 1919 (F. Haimbach) [1]. Cape May Point, July 3, 1916, July 29, 1915 (F. Haimbach) [2].

OHIO: Cincinnati, August 3, 1907 (A. F. Braun) [1].

WEST VIRGINIA: "W. Va." [1].

CRAMBUS HORTUELLUS var. TOPIARIUS Zeller.

MAINE: Orono [1].

UTAH: Vineyard, July 7-16, August 4, 1917 (Tom Spalding) [10].

CRAMBUS HORTUELLUS var. VACHELLELLUS Kearfott.

NEVADA: Verdi, June 1-10 (A. H. Vachell) [Paratype].

CRAMBUS ALBELLUS Clemens.

Without data: [Type, A. N. S. P., no. 7286 and 1 Paratype].

MASSACHUSETTS: Hyde Park, July 12 (F. Haimbach) [2].

PENNSYLVANIA: Roxboro, Philadelphia, June 13, 1915 (F. Haimbach) [2]. Hulmeville, Bucks County, June 26, 1920 (F. Haimbach) [2]. Emilie, Bucks County, July 4, 1924 (F. Haimbach) [6]. Langhorne, July 2 and 22 (F. Haimbach) [9]. Perkasie, June 18 (F. Haimbach) [4]. Pocono

Lake, July 25 and 28 (G. M. Greene) [2]. Rockville, July 5 and 22, 1915 (F. Haimbach) [2].

NEW JERSEY: Brown's Mills Junction, June 22, 1919 (F. Haimbach) [1].

MARYLAND: "Md." [1].

NORTH CAROLINA: Black Mountains, June 10 (W. Beutenmuller) [2].

OHIO: Cincinnati, August 24, 1903 (A. F. Braun) [1].

CRAMBUS BIGUTTELLUS Forbes.

PENNSYLVANIA: Smithtown, June 29, 1911 (F. Haimbach) [2].

NORTH CAROLINA: Black Mountains, July 6, 1912 (W. Beutenmiller) [1].

OHIO: Cincinnati, September 19, 1903 (A. F. Braun) [1].*

CRAMBUS INNOTATELLUS Walker.

LABRADOR: *Crambus inornatellus* Clemens [Type no. 7565]. Upper St. Augustine River, August 5, 1912 (H. G. Bryant) [1].

CANADA: Alberta, Calgary, August, 1907 (H. S. King) [2]. Saskatchewan, Lloydminster, July 31 [2]. Manitoba, Aweme, July 12, 1907 [1]. Cartwright, July 20-24, August 8-13, 1907 (J. F. Heath) [5].

COLORADO: Platte Canyon (E. J. Oslar) [2].

MAINE: Greenville, July 21-29, 1919 (F. Haimbach) [4]. King & Bartlett Lake (P. Laurent) [1].

NEW HAMPSHIRE: June 17-19, 1929 (M. M. Cary); August 10-30 (M. M. Cary and F. Haimbach); September 1-10, 1928 (M. M. Cary) [16].

CRAMBUS TURBATELLUS (Walker).

MAINE: Greenville, July 21-29, 1919 (F. Haimbach) [7].

MASSACHUSETTS: Hyde Park, July 13, 1910 (F. Haimbach) [1].

PENNSYLVANIA: Rockville, July 5, 1915 (F. Haimbach) [1].

VIRGINIA: Mountain Lake Park, July 26-31, 1906 (A. F. Braun) [1].

OHIO: Cincinnati, July 25, 1909 (A. F. Braun) [1].

CRAMBUS ELEGANS Clemens.

Without data: [Type no. 7285 and 1 Paratype].

MASSACHUSETTS: Hyde Park, August 21, 1907 (F. Haimbach) [1].

* This species was heretofore wrongly placed by me as *pusionellus* Zeller.

PENNSYLVANIA: Roxboro, Philadelphia, June 14-July 9 (F. Haimbach) [4]. Lower Merion Township, Montgomery County, June 26-July 24 (F. Haimbach) [7]. Swarthmore, September 9, 1915 (E. T. Cresson, Jr.) [2]. Langhorne, July 11-29, August 14 and September 11, 1922 (F. Haimbach) [5]. Edge Hill, June 25 (F. Haimbach) [1].

NEW JERSEY: Five Mile Beach, July 9, August 20-27 (F. Haimbach) [3].

VIRGINIA: Hot Springs, July 17-26 and August 11, 1916 (M. Hebard) [6].

WEST VIRGINIA: "W. Va." [1].

CRAMBUS POLINGI Kearfott.

ARIZONA: So. Ariz. (Poling) [Lectotype, A. N. S. P., no. 7192, by present designation].

CRAMBUS VULGIVAGELLUS Clemens.

Without data: [Type, A. N. S. P., no. 7289].

MASSACHUSETTS: Hyde Park, July 16-21 (F. Haimbach) [2].

NEW YORK: "N. Y." [3].

PENNSYLVANIA: Philadelphia, including Roxboro, September 6-15 (F. Haimbach) [7]. Lower Merion Township, Montgomery County, September 5-15 (F. Haimbach) [2]. Swarthmore, September 5, 1915 (E. T. Cresson, Jr.) [2]. Elwyn, September 17 (C. S. Wells) [1]. Langhorne, September 11, 1920 (F. Haimbach) [8].

NEW JERSEY: Lucaston, September 9 (F. Haimbach) [5].

TEXAS: October 17 [2].

OHIO: Cincinnati, September 3, 1902 (A. F. Braun) [1].

INDIANA: Bluffton, September 15, 1900 [1].

WISCONSIN: Crammoor, Wood County, August 25, 1907 (C. B. Hardenberg) [1].

COLORADO: Clear Creek, August 22, 1907 (E. J. Oslar) [2].

UTAH: Vineyard, August 9-11, 1917 (Tom Spalding) [2].

CRAMBUS PLUMBIFIMBRIELLUS Dyar.

CANADA: B. C., Kaslo, May, 1903 [1].

WASHINGTON: Pullman, July 7, 1898 (C. V. Piper [1; compared with type, H. G. Dyar].

CRAMBUS DORSIPUNCTELLUS Kearfott.

COLORADO: Denver (E. J. Oslar) [3].

ARIZONA: Oracle, July 3, 1903 (E. J. Oslar) [1].

CRAMBUS RURICOLELLUS Zeller.

MASSACHUSETTS: Hyde Park, August 21-22, 1907 (F. Haimbach) [5].

PENNSYLVANIA: Roxboro, Philadelphia, September 6, 1917 (F. Haimbach) [3]. Lower Merion Township, Montgomery County, September 1-5 (F. Haimbach) [3]. Castle Rock, September 16 (F. Haimbach) [1]. Langhorne, September 11, 1922 (F. Haimbach) [1].

NEW JERSEY: Lucaston, September 7 (F. Haimbach) [1]. Anglesea, May 27, 1905 (F. Haimbach) [1].

OHIO: Cincinnati, September 2, 1903 (A. F. Braun) [1].

ILLINOIS: "Ill.", August 28-September 6 [3].

CRAMBUS RURICOLELLUS subspecies **canadellus** forma nov.

Generally darker than nimotypical form, and the median lines of primaries form two distinct dark brown bars. E. Chesley Allen in his "Some notes on the Crambinae of Nova Scotia",[6] refers to this dark form. The locality where I collected these specimens is within seeing distance of the Province of Ontario, for which reason I consider the name given an appropriate one.

MAINE: Greenville, July 21-29, 1919 (F. Haimbach) [♂: *Type*, A. N. S. P., no. 7186; ♀: same data, *Allotype;* 3 *Paratypes;* 8 other specimens].

CRAMBUS TETTERELLUS (Zincken).

Without data: *Crambus camurellus* Clemens [Type, A. N. S. P., no. 7296].

PENNSYLVANIA: Philadelphia, including Roxboro, June 3-29, July 26, August 2-20, September 10-12 (F. Haimbach) [19]. Lower Merion Township, Montgomery County, July 5-29, August 3-22, September 15 (F. Haimbach) [7]. Langhorne, May 29-June 7, July 20-29, September 8-11 (F. Haimbach) [11].

VIRGINIA: Hot Springs, August 11-12, 1916 (M. Hebard) [7].

WEST VIRGINIA: "W. Va." [1].

NORTH CAROLINA: Black Mountains, June 16-23, 1912 (W. Beutenmuller) [3].

TEXAS: "Tex.", May 13, August 17, September 17-23 [12].

CRAMBUS DECORELLUS (Zincken).

MASSACHUSETTS: Bedford, July 14, 1907 (L. W. Swett) [2]. Hyde Park, August 29, 1907 (F. Haimbach) [1].

NEW YORK: Katonah, West Chester County, July 15 (W. Beutenmuller) [1].

[6] Proceedings of the Entomological Society of Nova Scotia, 1917, pp. 92-94.

PENNSYLVANIA: Roxboro, Philadelphia, June 24, 1906 (F. Haimbach) [6]. Lower Merion Township, Montgomery County, June 16-July 5 (F. Haimbach) [10].
FLORIDA: Dunedin, March 23, 1920 (W. S. Blatchley) [1].
TEXAS: "Tex." [1].

CRAMBUS COLORADELLUS Fernald.

COLORADO: Clear Creek, June 27, 1906 (E. J. Oslar) [1].
NEW MEXICO: Jemez Mountains, 6400 feet, July 14-15, 1927; 6600 feet, September 4, 1915 (J. Woodgate) [3].

CRAMBUS MUTABILIS Clemens.

Without data: [Type, A. N. S. P., no. 7288; 1 Paratype].
MASSACHUSETTS: Framingham, July 16, 1906 [1].
NEW YORK: Katonah, West Chester County, July 15 (W. Beutenmuller) [2].
PENNSYLVANIA: Philadelphia, including Roxboro, June 2-29 (F. Haimbach) [12]. Lower Merion Township, Montgomery County, May 30-July 5, August 14, 1917 (F. Haimbach) [8]. Langhorne, June 5-8, July 29, 1922 (F. Haimbach) [7]. Honey Brook, Chester County, August 25, 1910 (W. W. Climenson) [1].
NEW JERSEY: Holly Beach, August 12, 1906 (F. Haimbach) [1]. Cape May, June 30, 1907 (F. Haimbach) [2].
NORTH CAROLINA: Black Mountains, June 21, 1912 (W. Beutenmuller) [2].
FLORIDA: Dunedin, March 15, April 17, 1920 (W. S. Blatchley) [2]. Homestead, May 14, 1915 (D. M. Castle) [1]. Enterprise, May 3, 1915 (D. M. Castle) [1].
TEXAS: April 27-29 [2].
MISSOURI: St. Louis (A. Busck) [1].
KANSAS: Douglass County, August (E. S. Tucker) [1].
COLORADO: Denver (E. J. Oslar) [2].
UTAH: Vineyard, July 11, 1917 (Tom Spalding) [1].

CRAMBUS MURELLUS Dyar.

Colored drawing from type by National Museum artist.

CRAMBUS HEMIOCHRELLUS Zeller.

TEXAS: Galveston, May (F. H. Snow) [2].

CRAMBUS HAYTIELLUS (Zincken).

TEXAS: Brownsville, May 9 and 31, 1904 (H. S. Barber) [3].

CRAMBUS NEVADELLUS Kearfott.

NEVADA: Verdi, June 23-30 (A. H. Vachell) [Lectotype, A. N. S. P., no. 7193, by present designation].
UTAH: Vineyard, July 7-11, 1917 (Tom Spalding) [2].

CRAMBUS UNDATUS Grote.

CALIFORNIA: San Diego, February 2, 1908 (W. S. Wright) [1].

CRAMBUS TRISECTUS (Walker).

CANADA: Manitoba, Cartwright, August 31-September 4 (J. F. Heath) [9].
MASSACHUSETTS: Framingham, August 29, 1905 [1].
PENNSYLVANIA: Philadelphia, July 5, 1914 (F. Haimbach) [1]. Roxboro, Philadelphia, June 12, 1913 (F. Haimbach) [1]. Lower Merion Township, Montgomery County, June 1-10, July 6-25, August 6-16, September 5-27 (F. Haimbach) [14]. Honey Brook, Chester County, August 25, 1910 (F. Haimbach) [1].
NEW JERSEY: Five Mile Beach, August 20 (F. Haimbach) [1].
VIRGINIA: Hot Springs, July 10 and August 15, 1916 (M. Hebard) [2].
OHIO: Cincinnati, October 8, 1904 (A. F. Braun) [1].
INDIANA: Wells County, May 22, 1900 [1]. Bluffton, May 24, 1900 [1].
NEW MEXICO: Jemez Mountains, 6600 feet, August 30-September 9, 1915 (J. Woodgate) [4].
UTAH: Vineyard, August 11, 1907 (Tom Spalding) [2].

CRAMBUS SIMPLICIELLUS Kearfott.

ARKANSAS: Washington County, July-August (A. J. Brown) [Paratype].
PENNSYLVANIA: Philadelphia (F. Haimbach) [1].

CRAMBUS DIMIDIATELLUS Grote.

NEW MEXICO: Cloudcroft, June 17, 1902 (H. L. Viereck) [1].

CRAMBUS CALIGINOSELLUS Clemens.

Without data: [Type, A. N. S. P., no. 7283].
MASSACHUSETTS: Hyde Park, August 22, 1907 (F. Haimbach) [1]. Framingham, August 15, 1905 [1].
NEW YORK: Katonah, West Chester County, June 25 (W. Beutenmuller) [6].

PENNSYLVANIA: Roxboro, Philadelphia, June 16-22, July 3-10, August 2, 1915 (F. Haimbach) [14]. Lower Merion Township, Montgomery County, June 13-23, July 5-26, August 9-15 (F. Haimbach) [11]. Langhorne, June 5-7, July 20, 1922 (F. Haimbach) [4]. Weaver, July 21, 1917 (F. Haimbach) [1].

NEW JERSEY: Wenonah, July 19 (F. Haimbach) [1]. Five Mile Beach, July 9-17 (F. Haimbach) [2]. Cape May Point, July 24, 1914 (F. Haimbach) [2].

VIRGINIA: Hot Springs, July 26, August 6, 1916 (M. Hebard) [2].

NORTH CAROLINA: Black Mountains, July 23, 24, 1912 (W. Beutenmuller) [2].

CRAMBUS ZEELLUS Fernald.

PENNSYLVANIA: Weaver, July 21, 1917 (F. Haimbach) [1].

NEW JERSEY: Holly Beach, August 2, 1906 (F. Haimbach) [1]

OHIO: Cincinnati, July 16, 17 (A. F. Braun) [2].

MISSOURI: Kirkwood (Miss Murtfeldt) [1].

CRAMBUS MODESTELLUS Barnes and McDunnough.

NORTH CAROLINA: Black Mountains, June 4-28, 1912 (W. Beutenmuller) [4].

CRAMBUS LUTEOLELLUS Clemens.

MASSACHUSETTS: Hyde Park, July 8-16, 1910 (F. Haimbach) [2]. Framingham, July 21, 1906 [1].

NEW YORK: Katonah, West Chester County, June-July 15 (W. Beutenmuller) [4].

PENNSYLVANIA: Roxboro, Philadelphia, June 5-July 1 (F. Haimbach) [19]. Lower Merion Township, Montgomery County, June 17, July 1, 25 (F. Haimbach) [6]. Langhorne, June 7-July 16 (F. Haimbach) [12]. Weaver, July 21, 1917 (F. Haimbach) [5].

NEW JERSEY: Wenonah, July 15 (F. Haimbach) [1]. Five Mile Beach, June 28 (F. Haimbach) [1].

VIRGINIA: Hot Springs, August 12, 1916 (M. Hebard) [1].

NORTH CAROLINA: Black Mountains, July 5-26, 1912 (W. Beutenmuller) [2].

CRAMBUS LUTEOLELLUS var. ULAE Cockerell.

CANADA: Manitoba, Cartwright, July 27, 1908 (J. F. Heath) [1].

COLORADO: Golden, Chimney Gulch, July 15, 1904 (E. J. Oslar) [1]. Clear Creek (E. J. Oslar) [2].

HAIMBACHIA PLACIDELLA (Haimbach).

PENNSYLVANIA: Philadelphia, July 6 (F. Haimbach) [Paratype (*Crambus placidellus*)]. Lower Merion Township, Montgomery County, June 25-28, 1921 (F. Haimbach) [2]. Tullytown, July 9, 1922 (F. Haimbach) [2].

NEW JERSEY: Wenonah, July 27 (F. Haimbach) [Paratype (*Crambus placidellus*)]. Wenonah, July 28 (F. Haimbach) [1].

HAIMBACHIA SQUAMULELLA (Zeller).

PENNSYLVANIA: Lower Merion Township, Montgomery County, July 16-August 6 (F. Haimbach) [12].

NEW JERSEY: Wenonah, July 28 (F. Haimbach) [1]. Cape May Point, July 24-26 (F. Haimbach) [2].

GEORGIA: Kirkwood, July 23 [1].

NORTH CAROLINA: Black Mountains, July 22, 1912 (W. Beutenmuller) [1].

THAUMATOPSIS MAGNIFICUS (Fernald).

COLORADO: Maniton, June 30 [1].

NEW MEXICO: Jemez Springs, June 24, 1916 (J. Woodgate) [1]. Jemez Mountains, 6600 feet, July 15, 1915 (J. Woodgate) [1].

THAUMATOPSIS PEXELLUS (Zeller).

COLORADO: Denver (E. J. Oslar) [5]. Clear Creek, July 10, 1907 (E. J. Oslar) [4].

THAUMATOPSIS PEXELLUS var. COLORADELLUS (Kearfott).

COLORADO: Puebla, September, 1899 [Lectotype, A. N. S. P., no. 7194, by present designation (*Thaumatopsis coloradella*)].

THAUMATOPSIS GIBSONELLUS Kearfott.

CANADA: Ontario, Rostrevor, September 3, 1907 (Arthur Gibson) [♂: Lectotype, A. N. S. P., no. 7195, by present designation (*Thaumatopsis gibsonella*)]. Same locality and collector, September 5, 1907 [Paratype].

THAUMATOPSIS EDONIS (Grote).

NEW JERSEY: Lucaston, September 9-15 (F. Haimbach) [6].

TEXAS: "Tex." [1].

THAUMATOPSIS FERNALDELLUS Kearfott.

CANADA: Manitoba, Cartwright, July 2-August 8 (J. F. Heath) [6].
COLORADO: Clear Creek, July 20, 1907 (E. J. Oslar) [1].
ARIZONA: San Bernardino Ranch, Cochise County, 3750 feet, August (F. H. Snow) [2].
UTAH: Vineyard, July 11-16, 1917 (Tom Spalding) [2]. Stockton, September 2, 1904 (Tom Spalding) [1].

THAUMATOPSIS REPANDUS (Grote).

UTAH: Vineyard, July 16, 1917 (Tom Spalding) [1].

THAUMATOPSIS DAECKEELLUS Kearfott.

NEW JERSEY: Lucaston, October 10, 1902 (E. Daecke) [♂: Lectotype, A. N. S. P., no. 7188, by present designation]. Same locality and collector, October 7, 1905 [Topotype].

THAUMATOPSIS PECTINIFER (Zeller).

TEXAS: Brownsville, June, July [2].

EUFERNALDIA CADARELLA (Druce).

ARIZONA: Huachuca Mountains, August 27, 1903 (E. J. Oslar) [5].

OMMATOPTERYX TEXANA (Robinson).

WASHINGTON: Pullman, July 12, 1898 (C. V. Piper) [2].
COLORADO: Clear Creek (E. J. Oslar) [3].
UTAH: Vineyard, August 7-11, 1917 (Tom Spalding) [4].
ARIZONA: San Bernardino Ranch, Cochise County, 3750 feet, August (F. H. Snow) [2].
NEW MEXICO: Albuquerque (E. J. Oslar) [1].

ARGYRIA NIVALIS (Drury).

CANADA: Toronto [2].
MAINE: Greenville, July 21-29, 1919 (F. Haimbach) [1]. Monmouth, June 27, 1905 [1].
MASSACHUSETTS: Hyde Park, July 12, 1910 (F. Haimbach) [1]. Framingham, July 14, 1906 [1].
PENNSYLVANIA: Philadelphia, mostly at Roxboro, June 20-29 (F. Haimbach) [7]. Lower Merion Township, Montgomery County, June 29-July 17 (F. Haimbach) [3].
NEW JERSEY: Five Mile Beach (F. Haimbach) [1]. Cape May, June 30, 1907 (F. Haimbach) [1].
VIRGINIA: Hot Springs, July 2-August 1, 1916 (M. Hebard) [6].

NORTH CAROLINA: Black Mountains, July 11-17, August 13, 1912 (W. Beutenmuller) [4].
TEXAS: March 13 [2].
NEBRASKA: Omaha, June 20, 1920 (R. A. Leussler) [1]. Omaha (F. H. Marshall) [3].

ARGYRIA ARGENTANA (Martyn).

PENNSYLVANIA: "Pa." [1: *Argyria numulalis* Hübner].
NEW JERSEY: Wenonah, July 22 (F. Haimbach [4]. Sea Isle City, September 12, 1908 (F. Haimbach) [1]. Holly Beach, August 12, 1906 (F. Haimbach) [1]. Five Mile Beach, June 19, 1904, July 3, August 6 (F. Haimbach) [4]. Cape May, June 30, 1907 (F. Haimbach) [3]. Cape May Point, July 26, 1914 (F. Haimbach) [2].
FLORIDA: Dunedin, April 3-30 (W. S. Blatchley) [2]. Daytona, March, 1907 (P. Laurent) [2].
NEBRASKA: Omaha, July 20, 1910 (R. A. Leussler) [1]. Omaha (F. H. Marshall) [3].

ARGYRIA AURATELLA (Clemens).

Argyria critica Forbes, new syn.

Forbes' description of *critica* agrees very well with Clemens' type of *auratella*, on which there is no trace of yellow on distal half of inner margin. Walker's description of *palchella* also makes no reference to the yellow marking on the distal, nor the inner, half of inner margin. Specimens which have this yellow marking along the inner margin are therefore a variety, which I do not consider worthy of a name, as both forms are taken together. On July 21, 1917, I collected a large series of this species at Weaver, Pennsylvania (near Harrisburg) in which the two forms were equally divided; the specimens were perfectly fresh, and must have emerged on that day, evidently from one brood. It appears to me to be a grade of intensity in pigmentation. Specimens collected by me at Southern New Jersey shore points are marked more intensely than those taken in Pennsylvania and more Northern points.

MASSACHUSETTS: "Mass." (S. H. Scudder, Jr.) [Type, A. N. S. P., no. 7284]. Framingham, August 8, 1907 (C. A. Frost) [1]. Hyde Park, July 8, 1910 (F. Haimbach [1].
NEW YORK: Katonah, West Chester County, July (W. Beutenmuller) [1].
PENNSYLVANIA: Mount Airy, Philadelphia, July 28 (P. Laurent) [2 topotypes of *Argyria critica* Forbes]. Weaver, July 21, 1907 (F. Haimbach) [4].
NEW JERSEY: Wenonah, July 13-28 (F. Haimbach) [2].

Holly Beach, July 26, 1899 (F. Haimbach) [1]. Five Mile Beach, August 4 (F. Haimbach) [1]. Cape May Point, July 24, 1915 (F. Haimbach) [1].

ARGYRIA LACTEELLA (Fabricius).

FLORIDA: Dunedin, March 21-31, April 15, November 28 (W. S. Blatchley) [4].

PLATYTES MULTILINEATELLA (Hulst).

OHIO: Cincinnati, July 11, 1904 (A. F. Braun) [1].
FLORIDA: Melbourne, March (P. Laurent) [1]. Daytona, March (P. Laurent) [3].

PLATYTES PANOLOPE Dyar.

FLORIDA: Dunedin, March 29, 1921, April 28, 1920 (W. S. Blatchley) [2].

PLATYTES? ALLENI (Fernald).

PENNSYLVANIA: Philadelphia, June 2, 1914 (F. Haimbach), August (H. W. Wenzel) [2]. Lower Merion Township, Montgomery County, July 7-23, September 5 (F. Haimbach) [3].
NEW JERSEY: Sea Isle City, September 12, 1908 (F. Haimbach) [1].

EOREUMA DENSELLUS (Zeller).

PENNSYLVANIA: Lower Merion Township, Montgomery County, July 16-August 6 (F. Haimbach) [6]. Hulmeville, Bucks County, July 16, 1924 (F. Haimbach) [1].
TEXAS: May 20 [2].

CHILO MULTIPUNCTELLUS Kearfott.

ARIZONA: Carr Canyon, Huachuca Mountains, July, 1907 (H. A. Kaeber) [4].

CHILO PURITELLUS Kearfott.

ARIZONA: Carr Canyon, Huachuca Mountains, July, 1907 (H. A. Kaeber) [1].

CHILO PLEJADELLUS Zincken.

PENNSYLVANIA: Philadelphia, June 4-11, September 4 (F. Haimbach) [3]. Lower Merion Township, Montgomery County, August 14-29 (F. Haimbach) [4]. Tullytown, Bucks County, July 9, 1922 (F. Haimbach) [1].

CHILO FORBESELLUS Fernald.

NEW JERSEY: Anglesea, July 10 (P. Laurent) [1].

IESTA LISETTA Dyar.

FLORIDA: Dunedin, February 23, March 26-April 23 (W. S. Blatchley) [5].

DIATRAEA SACCHARALIS (Fabricius).

MEXICO: Vera Cruz (Koebele) [1].

DIATRAENOPSIS DIFFERENTIALIS (Fernald).

FLORIDA: Dunedin (W. S. Blatchley) [2].

DIATRAENOPSIS IDALIS (Fernald).

ILLINOIS: Chicago [1].
TEXAS: Brownsville, June [2].

ALAMOGORDIA PARALLELA (Kearfott).

NEW MEXICO: Alamagordo, April 26, 1902 (Viereck & Rehn) [♀: Allotype]. Same locality and collectors, April 26-May 4, 1902 [15 Paratypes].

OCCIDENTALIA COMPTULATALIS (Hulst).

CANADA: Cartwright, Manitoba, July 27, 1908 (J. F. Heath) [2].
UTAH: Vineyard, July 16-August 9, 1917 (Tom Spalding) [11].
COLORADO: Clear Creek, August 1, 1907 (E. J. Oslar) [1].

EUROPEAN SPECIES.

CRAMBUS COMBINELLUS Schiffermüller.

AUSTRIA: Vienna (Staudinger) [1].
Without data [2].

CRAMBUS COULONELLUS Duponchel.

Pontresina, July 15, 16 (F. E. Lowe) [2]. Rochers de Naye, July 12, 1911 (F. E. Lowe) [1]. Courmayeur, July, 1902 (F. E. Lowe) [2]. Engelberg, July 16, 1901 [2]. Preda Albula, P., July, 1913 (F. E. Lowe) [1].

CRAMBUS SPURIELLUS Hübner.

Pontresina, July 15-29, 1907 (F. E. Lowe) [4]. Steinen Alp, Berisal, July 25, 1911 (F. E. Lowe) [2]. Simplon, July 23, 1911 [1]. Eclepeus, June 1907 (F. E. Lowe) [1].

CRAMBUS INQUINATELLUS Schiffermüller.

Blightwell Heath, Suffolk, August 8, 1908 [1]. Miraborne, August, 1906 [7].

CRAMBUS SUBFLAVELLUS Duponchel.

Vizzavona, July 19-30, 1914 (F. E. Lowe) [6]. Tattone, July, 1914 (F. E. Lowe) [2].

CRAMBUS GENICULEUS Haworth.

St. Peter Port, August 20, 1916 (F. E. Lowe) [1]. Guernsey, October 23-30 (F. E. Lowe) [7].

CRAMBUS POLIELLUS Treitschke.

Without data [2].

CRAMBUS DELIELLUS Hübner.

Potsdam Str. [1]. Without data [3].

CRAMBUS LITHARGYRELLUS Hübner.

Zermatt, August, 1898, at light [2].

CRAMBUS TRISTELLUS Schiffermüller.

Without data [11].

CRAMBUS SELASELLUS Hübner.

Harwich district, July, August (G. F. Mathew) [5].

CRAMBUS LUTEELLUS Schiffermüller.

Breslau (Staudinger) [2].

CRAMBUS ZERMATTENSIS Frey.

Zermatt Str. [1].

CRAMBUS PERLELLUS Scopoli.

Harwich district, July, 1910 (G. F. Mathew) [2]. Instow, July, 1907 (G. F. Mathew) [1]. Without data [12].

CRAMBUS PERLELLUS var. WARRINGTONELLA Stt.

Harwich district, July 5, 1911 (G. F. Mathew) [1]. Wimborne, August, 1906 [1]. Instow, June, 1909 (G. F. Mathew) [1]. Risley Moss, Lanca, July, 1903 [1]. Pontresina, July 16-30, 1910 (F. E. Lowe) [2].

CRAMBUS ROSTELLUS Laharpe.

Seisser Alp (Staudinger) [1]. Pentresina, July 16-30 (F. E. Lowe) [3].

CRAMBUS SAXONELLUS Zincken.

Prague (Staudinger) [1]. Without data [2].

CRAMBUS FULGIDELLUS Hübner.

Without data [2].

CRAMBUS RADIELLUS Hübner.

Simplon, July 23, 1911 [4]. Laquinthal, July 14-22, 1911 (F. E. Lowe) [1]. Pontresina, July 13-30 (F. E. Lowe) [2]. Steiner Alp, Berisal, July 25, 1911 (F. E. Lowe) [1]. Without data [2].

CRAMBUS MARGARITELLUS Hübner.

Risley Moss, Lanca, July, 1904 [8]. Without data [2].

CRAMBUS PYRAMIDELLUS Treitschke

Preda Albula, P., July, 1913 (F. E. Lowe) [1]. Laguinthal, July 14-23, 1911 (F. E. Lowe) [1]. Trafoi, July, 1903 [1]. Mt. Pilatus, July 9, 1901 [2].

CRAMBUS PAUPERELLUS Treitschke.

La Grave, July 25-August 1, 1909 (F. E. Lowe) [1].

CRAMBUS CONCHELLUS Schiffermüller.

Rochers de Naye, July 12, 1911 (F. E. Lowe) [2]. Engelberg, July, 1901 [2]. Laquinthal, July 14-22, 1911 (F. E. Lowe) [2]. Val Tiniere, June, 1907 (F. E. Lowe) [1]. Meizingen, July 6, 1904 [1]. No. 63 5/56, (Boll) [2].

CRAMBUS PINELLUS Linnaeus.

Nr. Wimborne, August, 1907 (G. F. Mathew) [8].

CRAMBUS MYELLUS Hübner.

Without data [1].

CRAMBUS SPECULALIS Hübner.

(Staudinger) [1].

CRAMBUS LUCTIFERELLUS Hübner.

Trofoi, July, 1903 [1]. Laquinthal, July 14-22 (F. E. Lowe) [1]. Pontresina, July, 1907, 1912 (F. E. Lowe) [4].

CRAMBUS CORSICELLUS Duponchel.

Tattona, July, 1914 (F. E. Lowe) [2].

CRAMBUS FALSELLUS Schiffermüller.

Camford, S. W., 1873 [1]. Cambridge, July [4]. Boroden, Edleston (F. Bond) [2].

CRAMBUS MACULALIS Zetterstedt.

Pontresina, July 16-30, 1910 (F. E. Lowe) [2].

CRAMBUS CHRYSONUCHELLUS Scopoli.

Without data [8].

CRAMBUS CRATERELLUS Scopoli.

Without data [2].

CRAMBUS LUCELLUS Herrich-Schäffer.

Bondol, Cote de Azur, June 11-20, 1913 (F. E. Lowe) [2]. La Ste. Baume, July 12-15, 1914 (F. E. Lowe) [4].

CRAMBUS HORTUELLUS Hübner.

New Forest (C. Galliver) [7]. Unst., 1895 (P. M. Bright) [1].

CRAMBUS CULMELLUS Linnaeus.

Unst., 1895 (P. M. Bright) [5].

CRAMBUS DELICATELLUS Zeller.

Digne, June 14-25, 1910, July 16, 1909 (F. E. Lowe) [4]. Ste. Baume, June 25-July 2, 1912 (F. E. Lowe) [1]. Martigny, June, 1907 (F. E. Lowe) [2]. Vernet-Piz: Or., June 14-26, 1911 (F. E. Lowe) [1].

CRAMBUS DUMETELLUS Hübner.

Lancashire Hodgk. (F. Bond) [6]. New Forest (F. Bond) [2].

CRAMBUS PRATELLUS Linnaeus.

Pleinmont Gu., July, 1915 (F. E. Lowe) [8].

CRAMBUS ALIENELLUS Zincken.

Without data [4]. 1 labeled "Sienig."

CRAMBUS SILVELLUS Hübner.

July 27, '57 [2]. Without data [6].

CRAMBUS ERICELLUS Hübner.

Without data [3].

CRAMBUS PASCUELLUS Linnaeus.

Barum, July, 1905 [3]. Instow, June 26, 1908 (G. F. Mathew) [1]. Wicken, June 30, 1902 [3]. Beech Haven [1]. Neckar, Bischofsheim, B., June 25 (F. Weigand) [1].

CRAMBUS ULIGINOSELLUS Zeller.

Without data [12].

CRAMBUS HAMELLUS Thunberg.

#31, August 31, '66 [3].

PLATYTES CERUSSELLUS Schiffermüller.

Without data [7].

PLATYTES ALPINELLUS Hübner.

Portsmouth, Moncraff, 1872 [4].

EROMENE BELLA Hübner.

La Ste. Baume, June 22-29, 1913 (F. E. Lowe) [3]. Nans-Var., June 25-July 11, 1914 (F. E. Lowe) [2]. Bondol, Cote de Azur, June 11-20, 1914 (F. E. Lowe) [1].

Centenary of the Entomological Society of France.

The Entomological Society of France, founded in 1832, will soon celebrate its centenary at Paris and desires to give to this event all possible splendor.

The official ceremony of the centenary, the celebrations and excursions which will be arranged for this occasion will occur at the same time as the Fifth International Congress of Entomology, which will be held at Paris in 1932. Invitations will be sent to the entomological societies of the entire world and we hope that many delegates will take part in the festivities, the program and date of which will be fixed later.

But it seems to us that such celebrations should not be the only manifestation by our society on the hundredth year of its existence. It will be appropriate to crown the magnificent series of one hundred volumes of *Annales de la Société entomologique de France* by the publication of an extraserial "Centenary" volume, containing a history of our Society from its beginning and also original memoirs by our best French authors and the best known entomologists of foreign countries.

Moreover, our Society wishes to publish a *Catalogue raisonné* of the Coleoptera of France and to complete the general tables of the *Annales*, unfinished since 1890.

It is evident that the realization of so extensive a program is dependent upon the resources which our Society will have

at its disposal. A subscription list has already been opened. It is hoped that all the members of our Society will impose on themselves the duty of subscribing and of rendering our centenary publications worthy of the efforts of our predecessors.

A later notice will fix the sum at which subscribers will have the right to receive the Centenary volume.

(Translated.) For the Centenary Committee:

L. CHOPARD, *Secretary.* DR. R. JEANNEL, *President.*

A Note on the Longevity of a Paralyzed Orthopteran (Locustidae; Hymen.: Sphegidae).

On July 19, 1929, at Zion National Park, Utah, I surprised a large wasp (*Chlorion ichneumonium* (Linn.)) carrying an immature katydid (*Microcentrum* sp?). An attempt was made to capture them both but the wasp escaped, leaving its prey. This, upon examination, was found to have been paralyzed by the wasp. It was capable only of feeble movements of the antennae and palpi. Life processes evidently continued, as faeces were occasionally voided. It was placed in a cotton-stoppered vial which allowed circulation of air and prevented excessive evaporation. Note was made of its condition from day to day. It lived, as was evidenced by movements, from 14 to 17 days. The last few days decomposition set in at the extremities and on the 17th day it was definitely dead.—LOWELL A. WOODBURY, University of Utah, Salt Lake City, Utah.

Notes on Corythuca pallipes Parshley, and Leptodictya (Locustidae; Hymen.: Sphecidae).

The writer has been interested in the Tingididae for some time and has obtained two records which may be of interest. A rather large infestation of *Corythuca pallipes* Parshley was found in Garrett County, Maryland, feeding on its usual host plant, *Betula lutea* Michx. Heretofore the insect has not been reported south of New York. The infestation was near Bear Creek on the top of Keyser's Ridge, about 2000 feet above sea level. The insects were collected September 17, 1929.

On October 5, 1929, specimens of *Leptodictya simulans* Heidemann were collected by Dr. E. N. Cory from Petersburg, Virginia. These insects occurred in large numbers on *Arundinaria tecta* (Walt.) Muhl., where they had caused considerable damage. According to Blatchley's *Heteroptera of Eastern North America,* the host plant of this insect has never been reported. However, *L. simulans* should occur also on *A. macrosperma* Michx. These are the only two species of the Bambuseae native to eastern United States as far north as Virginia and Maryland, where they grow in moist soil.—L. P. DITMAN, College Park, Maryland.

International Society of Ipidologists.

We note in the *Canadian Entomologist* for February, 1930, that a society by this name has been proposed by Dr. P. Spessivteff at a meeting of the International Congress of Forest Experiment Stations held at Stockholm, for the intensive study of the bark beetles. All those interested in bark beetles and desirous of joining the new society are requested to forward their names and addresses, with a statement of their more special interests, to Dr. I. Tragardh, Experimentalfaltet, Sweden.

Some Coincidences in the Lives of Three Prominent New Zealand Entomologists of the Last Century.

Three boys were born in England—F. W. Hutton in 1836, Thomas Broun in 1838 and W. M. Maskell in 1840. All three, before they reached the age of twenty, entered the army. Maskell left England soonest, and went to New Zealand in 1860. Broun entered the army at the age of sixteen, during the Crimean War, and after the close of that war accompanied his regiment to Burma. Here he became attracted by the large size and brilliant colors of many of the tropical insects, and began to collect. Then came the outbreak of the Indian Mutiny and his regiment served in India during the whole period of the mutiny. He was present at the assault and capture of Delhi and at the relief of Lucknow. He retired from the army in 1862, married, and went to New Zealand in 1863. Hutton as a boy served as a midshipman in the navy. Later he received a commission in the Royal Welch Fusiliers, saw active service in the Crimea and in the Indian Mutiny. He was a naturalist by instinct. In 1866 he went to New Zealand and eventually was Professor of Biology in Canterbury College and stayed there for many years. He was also Curator of the Canterbury Museum.

Broun, when he got to New Zealand, found that the Maori War had broken out, and he was commissioned a Captain and served through the whole war. He was appointed Government Entomologist in 1890 and held the post for several years. He worked with insects until his death. He knew the Hemiptera and the Orthoptera and had a good knowledge of most of the other orders, but he was primarily a coleopterist.

Captain Hutton's work covered a broad range of entomological subjects, but in entomology he published over thirty papers of systematic importance.

Mr. Maskell, after reaching New Zealand, was a sheep farmer for some years. Later he became Provincial Secretary and Treasurer of Canterbury Province, and toward the end

of his life he was Registrar of the University of New Zealand. Originally a microscopist, he gradually became interested in the Coccidae, Aleurodidae and Psyllidae, at the same time working with the Desmids in botany. His work on scale insects made him known to entomologists all over the world.

That three boys born in England at about the same time should have become soldiers was not at all unlikely; that two of these boys should have served in the Crimea and in the Indian Mutiny was not unlikely; that all three of them should have gone to New Zealand at about the same time was not unlikely; but that all three of them added to these three coincidences a fourth coincidence that all became well known entomologists rounds out the story into something rather remarkable.

L. O. HOWARD, Washington, D. C.

Entomological Literature

COMPILED BY FRANK HAIMBACH AND LAURA S. MACKEY UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers **within brackets** [ ] refer to the journals, as numbered in the list of Periodicals and Serials published in the January and June numbers (or which may be secured from the publisher of Entomological News for 10c), in which the paper appeared. The number of, or annual **volume,** and in some cases the part, heft, &c. the latter **within** ( ) follows; then the pagination follows the **colon** :

All continued papers, with few exceptions, are recorded only at their first installments.

*Papers containing new forms or names have an * preceding the author's name.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞ *Note the change in the method of citing the bibliographical references, as explained above.*

Papers published in the Entomological News are not listed.

GENERAL.—Borodin. D. N.—Field insects of Russia, with special reference to insects introduced into America and their coefficient of injury. [Trans. 4th. Int. Cong. Ent.] 982-991, ill. **Brues, C. T.**—The insect fauna of thermal springs. [Trans. 4th. Int. Cong. Ent.] 237-240. **Carpenter, F. M.**—The lower permian insects of Kansas. Part 1. Introduction and the order Mecoptera. [Bull. Mus. Comp. Zool. Harvard Coll.] 70: 69-101, ill. **Chapman, R. N.**—Biotic potential, environmental resistance and insect abund-

ance. [X. Cong. Int. Zool, Budapest] 1209-1218, ill. **Chestnut, A.**—Insect hunter. [Nat. Mag.] 15: 176-178, ill. **Cockerell T. D. A.**—The future of taxonomy. [68] 71: 240-241. **Collin, J. E.**—A protest against the use of abbreviations in original descriptions. [Trans. 4th. Int. Cong. Ent.] 303-305. **Corporaal, J. B.**—Forum on problems of taxonomy: Determinations. [Trans. 4th. Int. Cong. Ent.] 795-796. **Corporaal, J. B.**—The share of the Netherlands in the development of entomology in past centuries. [Trans. 4th. Int. Cong. Ent.] 357-360. **Cresson, E. T., Jr.**—Index to the literature of the species of insects. [Trans. 4th. Int. Cong. Ent.] 484-488. **Edwards, F. W.**—An account of a collecting trip to Patagonia and Southern Chile. [Trans. 4th. Int. Cong. Ent.] 416-417. **Efflatoun, H. C.**—The development of entomological science in Egypt. [Trans. 4th. Int. Cong. Ent.] 737-742. **Estable, C.**—Observaciones sobre algunos insectos del Uruguay. [An. Mus. Hist. Nat. Montevideo] 3: 57-92. **Flanders, S. E.**—The mass production of Trichogramma minutum and observations on the natural and artificial parasitism of the codling moth egg. [Trans. 4th. Int. Cong. Ent.] 110-130, ill. **Felt, E. P.**—Insect inhabitants of the upper air. [Trans. 4th. Int. Cong. Ent.] 869-872. **Felt, Cockerell & Troxell.**—Scientific names. [68] 71: 215-218. **Heikertinger, F.**—The principle of continuity in nomenclature. [Trans. 4th. Int. Cong. Ent.] 481-483. **Holland, W. J.**—Forum on problems of taxonomy: Types. [Trans. 4th Int. Cong.] 688-694. **Holland, W. J.**—The mutual relations of museums and expert specialists. [Trans. 4th. Int. Cong. Ent.] 278-285. **Horn W.**—On the splitting influence of the increase of entomological knowledge and on the enigma of species. [Trans. 4th. Int. Cong. Ent.] 500-507, ill. **Horn, W.**—The future of insect taxonomy. [Trans. 4th. Int. Cong. Ent.] 34-51. **Jablonowski, J.**—The black locust-tree-scale, Lecanium robiniarum and the European corn borer, Pyrausta nubilalis, a biological parallel. [Trans. 4th. Int. Cong. Ent.] 455-462. **Jeannel, R.**—Forum on problems of taxonomy: Collections. [Trans. 4th. Int. Cong. Ent.] 797-800. **Kennedy, C. H.**—The theory of nomenclature. [Trans. 4th. Int. Cong. Ent.] 665-672. **Lamborn, W. A.**—The remarkable adaptation by which a dipterous pupa (Tabanidae) is preserved from the danger of fissures in drying mud. [Proc. R. Soc., London] 106, (B): 83-87, ill. **Le Cerf, F.**—Une technique simplifiee pour la coloration des genitalia. [59] (B, III) 3: 147-152. **Martini, E.**—Klima und seuchen vom standpunkte des entomologen. [Trans. 4th. Int. Cong. Ent.] 463-477. **Martynov, A. B.**—

Permian entomofauna of North Russia and its relation to that of Kansas. [Trans. 4th. Int. Cong. Ent.] 595-599. **Melander, A. L.**—The selection of family names. [Trans. 4th. Int. Cong. Ent.] 657-664. **Muir, F.**—The role of function in taxonomy and its relationship to the genitalia in insects. [Trans. 4th. Int. Cong. Ent.] 600-604. **Pictet, A.**—Quelques considérations découlant d'expériences de génétique en rapport avec la systématique. [41] 14: 176-178. **Reiser, O.**—Naturwissenschaftlicher bericht über den verlauf der von der K. Akademie der Wissenschaften in Wien 1903 unter leitung von weiland hofrat Dr. F. Steindachner nach Nordost-Brasilien entsendeten Sammel-Expedition. [Ann. Naturhist. Mus. Wien] 43: 1-73, ill. **Roepke, W.**—A new method of making microscopic aphid preparations. [Trans. 4th. Int. Cong. Ent.] 917-918. **Rozanova, M.**—Von den niedersten taxonomischen einheiten. [Jour. Soc. Bot. Russie] 13: 341-342. **Saalas, U.**—Ueber die anwendung der linien-abschätzung bei der frequenzbestimmung von forstinsekten. [Trans. 4th. Int. Cong. Ent.] 646-656, ill. **Schilder, F. A.**—Einiges über "Bestimmungstabellen." [2] 25: 194-196. **Silvestri, F.**—The relation of taxonomy to other branches of Entomology. [Trans. 4th. Int. Cong. Ent.] 52-54. **Stiles, C. W.**—The future of zoological nomenclature, with an appendix: history of rules *re* designation of genotypes. [Trans. 4th. Int. Cong. Ent.] 622-645. **Trägardh, I.**—Investigations of the fauna of a dying tree. [Trans. 4th. Int. Cong. Ent.] 773-780, ill. **Van Duzee, E. P.**—The regional museum and one of its problems. [Trans. 4th. Int. Cong. Ent.] 1003-1004. **Van Duzee, E. P.**—Remarks on the insect collections in the museum of the California Academy of Sciences. [Trans. 4th. Int. Cong. Ent.] 801-802. **Van Dyke, E. C.**—The influence which geographical distribution has had in the production of the insect fauna of North America. [Trans. 4th. Int. Cong. Ent.] 555-566. **Verity, R.**—On the necessity of a revision of the rules of entomological nomenclature concerning groups of lower rank than the specific one. [Trans. 4th. Int. Cong. Ent.] 479-480. **Wade, J. S.**—Vignettes of Henry Edwards and John Muir. [76] 1930: 240-250. **Waterston, J.**—Forum on problems of taxonomy: Discussion on types. [Trans. 4th. Int. Cong. Ent.] 695-699. **Wheeler, W. M.**—Two interesting neotropical myrmecophytes (Cordia nodosa and C. alliodora). [Trans. 4th. Int. Cong. Ent.] 342-353. **Wolff, M.**—Vom missbrauch des gesetzes der kausalität in der biologie. [34] 86: 175-179.

ANATOMY, PHYSIOLOGY, ETC.—Alpatov, W. W.—Variability of the honeybee tongue biometrically investigated, and practical questions connected with the problem of the selection of the honeybee. [Trans. 4th. Int. Cong. Ent.] 1010-1019, ill. **Bodenheimer and Samburski**—Ueber den wärmeausgleich bei insekten. [34] 86: 208-211, ill. **Burnside, C. E.**—Septicemia of the honeybee. [Trans. 4th. Int. Cong. Ent.] 757-767. **Eastham, L. E. S.**—The formation of germ layers in insects. [Biol. Rev. & Biol. Pro. Cambridge Phil. Soc.] 5: 1-29. **Eidmann, H.**—Influence of temperature on the number of eggs in lepidoptera. [Trans. 4th. Int. Cong. Ent.] 355-356. **Francis, E.**—Arthropods in the transmission of Tularaemia. [Trans. 4th. Int. Cong. Ent.] 929-944, ill. **Gerould, J. H.**—History of the discovery of periodic reversal of heart-beat in insects. [68] 71: 264-265. **Gerould, J. H.** — Periodic reversal of heart-beat in Bombyx and other moths. [Trans. 4th. Int. Cong. Ent.] 516-522. **Graham-Smith, G. S.** — Further observations on the anatomy and function of the proboscis of the blow-fly Calliphora erythrocephala. [Parasitology] 22: 47-115, ill. **Hannes, F.**—Ueber die verschiedenen arten des "Lernens" der honigbiene und der insekten überhaupt. [89] 47: 89-150. **Heikertinger, F.** — Ueber das mimikryproblem und sein schwesterprobleme. [Trans. 4th. Int. Cong. Ent.] 821-831. **Henriksen, K. L.**—Contribution to the interpretation of the cephalic segments of Arthropoda. [Trans. 4th. Int. Cong. Ent.] 589-594. **Imhof, O. E.** — Berichtigungen zur kenntnis des baues von insektenflügeln. [Trans. 4th. Int. Cong. Ent.] 793-794. **Keilin & Nuttall.** — Iconographic studies of Pediculus humanus. [Parasitology] 22: 1-10, ill. **Leiby, R. W.**—Polyembryony in insects. [Trans. 4th. Int. Cong. Ent.] 873-887. **Martini & Achundow.**—Beeinflussung der farbe von mücken und ihren larven. [Trans. 4th. Int. Cong. Ent.] 478. **Miller, J. M.**—The relation of windfalls to barkbeetle epidemics. [Trans. 4th. Int. Cong. Ent.] 992-1002, ill. **Mukerji, R. N.**—The "Nucleal Reaction" in Apanteles sp., with special reference to the secondary nuclei and the germ-cell determinant of the egg. [Proc. R. Soc., London] 106, (B): 131-139, ill. **Parfentjev, J. A.** — Researches in insect toxicology. [Trans. 4th. Int. Cong. Ent.] 857-864, ill. **Parker, J. R.**—Some effects of temperature and moisture upon the activities of grasshoppers and their relation to grasshopper abundance and control. [Trans. 4th. Int. Cong. Ent.] 322-332. **Patterson, J. T.**—Proof that the entire chromosome is not eliminated in the production of

somatic variations by x-rays in Drosophila. [85] 15: 141-149, ill. **Patterson, J. T.**—Somatic segregation produced by x-rays in Drosophila melanogaster. [Pro. Nat. Acad. Sci. U. S. A.] 16: 109-111. **Portier & Rothays.**—Mode de vol des insects et charge alaire par unité de surface. [69] 190: 399-400. **Poulton, E. B.**—Adaptations which hinder or prevent inbreeding in insects. [Trans. 4th. Int. Cong. Ent.] 582-588. **Rensch, B.**—Das prinzip geographischer Rassenkreise und das problem der Artbildung. 206 pp., ill. **Ronzoni & Bishop.**—Carbohydrate metabolism in the honey bee larva. [Trans. 4th. Int. Cong. Ent.] 361-365. **Roubaud, M. E.**—Suspension évolutive et hibernation larvaire obligatoire, provoquées par la chaleur, chez le moustique commun, Culex pipiens. Les diapauses vraies et les pseudo-diapauses chez les insectes. [69] 190: 324-326. **Rudolfs, W.**—Environmental factors and mosquito breeding. [Trans. 4th. Int. Cong. Ent.] 945-959, ill. **Taylor, T. H.**—The blowfly's mouth. [31] 125: 238, ill. **Watanabe, K.**—On the relations between the color of silkworms and the environment. [Trans. 4th. Int. Cong. Ent.] 372-373. **Watson, L. R.**—Instrumental insemination of queenbees. [Trans. 4th. Int. Cong. Ent.] 976-977. **Yung-Taï, T.**—Sur les mitoses multipolaires dans les cellules épithéliales de l'intestin postérieur de Galleria mellonella pendant la métamorphose. [77] 103: 229-231.

ARACHNIDA AND MYRIOPODA.—Baerg, W. J.—Some poisonous arthropods of North and Central America. [Trans. 4th. Int. Cong. Ent.] 418-438. ***Chamberlin, J. C.**—A synoptic classification of the false scorpions or chelaspinners, with a report on a cosmopolitan collection of the same. Part II. The Diplosphyronida (Chelonethida). [75] 5: 1-48, ill., cont. **Elliott, F. R.**—An ecological study of the spiders of the beech-maple forest. [43] 30: 1-22. **Fischel, W.**—Wachstum und häutung der spinnen. 2. Mitteilung: Weitere beobachtungen an retitelen und vaganten araneen. [94] 136: 78-107, ill.

THE SMALLER ORDERS OF INSECTS.—Bartenef, A. N.—Ueber Calopteryx splendens und ihre Biotypen, besonders die westasiatischen. [89] 58: 521-540. **Calvert, P. P.**—The significance of Odonate larvae for insect phylogeny. [Trans. 4th. Int. Cong. Ent.] 919-925, ill. **Emerson, A. E.**—Communication among termites. [Trans. 4th. Int. Cong. Ent.] 722-727. **Enderlein, G.**—Ueber den laut-apparat der flöhe. [Trans. 4th. Int. Cong. Ent.] 771-772, ill. **Jordan,**

K.—On some problems of distribution, variability and variation in North American Siphonaptera. [Trans. 4th. Int. Cong. Ent.] 489-499, ill. **Silvestri, F.**—On postembryonal development of Japygidae (Thysanura). [Trans. 4th. Int. Cong. Ent.] 905-908, ill. **Spencer, G. J.** — The fire brat, Thermobia domestica (Lepismidae) in Canada. [4] 62: 1-2. **Tillyard, R. J.** — The evolution of the order Odonata. [Trans. 4th. Int. Cong. Ent.] 543-545. **Walley, G. S.** — Review of Ephemerella nymphs of western North America (Ephemeroptera). [4] 62: 12-20, ill.

ORTHOPTERA.—Karny, H. H.—Revisione dei Grillacridi dei musei di Genova e Torino e della collezione Griffini. [Mem. Soc. Ent. Italiana] 7: 154pp., ill. ***Menozzi, C.** — Diagnosi di cinque nuove specie di Dermatteri. (S). [Mem. Soc. Ent. Italiana] 8: 8-18, ill.

HEMIPTERA.—*Jaczewski, T.—Notonectidae from the state of Paranà. [An. Mus. Zool. Polonici] 7: 121-136. **King, W. V.** — The cotton flea hopper (Psallus seriatus). [Trans. 4th. Int. Cong. Ent.] 452-454. **Severin, H. H. P.**—Life-history of beet leafhopper, Eutettix tenellus in California. [67] 5: 38-88, ill. **Spencer, G. J.**—The status of the barn swallow bug, Oeciacus vicarius. [4] 62: 20-21. **Takahashi, R.** — List of the aphid genera proposed as new in recent years. [10] 32:24pp. **Thomsen, M.**—Sex-determination in Lecanium. [Trans. 4th. Int. Cong. Ent.] 18-24, ill. **de la Torre-Bueno, J. R.** — Records of Heteroptera from Nova Scotia. [4] 62: 6-7. **Vayssière, P.** — Note complémentaire sur les coccides monophléboides. [Trans. 4th. Int. Cong. Ent.] 81-86, ill.

LEPIDOPTERA.—Bouvier, E. L. — Observations systématiques sur les Saturnioïdes Américains. [Trans. 4th. Int. Cong. Ent.] 909-916, ill. **Corti, A.**—Ueber die präparation des flügel-geäders bei Lepidopteren. [41] 14: 180-181. **Fenton, F. A.** — Biological notes on the pink bollworm (Pectinophora gossypiella) in Texas. [Trans. 4th. Int. Cong. Ent.] 439-447. ***Hampson, G. F.**—New genera and species of Phycitinae (Pyralidae). [75] 5: 50-80. ***Meyrick, E.** — Exotic Microlepidoptera. 545-576. **Vogeler, B.** — Die zucht von Rothschildia auróta speculifera. (S). [14] 43: 247-248.

DIPTERA. — Alexander, C. P. — A comparison of the systems of nomenclature that have been applied to the radial

field of the wing in the Diptera. [Trans. 4th. Int. Cong. Ent.] 700-707. ***Bau, A.**—Cuterebra conflans und subbuccata, spec. novae, sowie bemerkung über C. schroederi. (Oestridae). (S). [60] 90: 303-307, ill. ***Cordero, E. H.**—Contribución al estudio de los Dipteros del Uruguay, I. Lophomyidium uruayense n. gen. n. sp. Nueva Ceratopogonina Hematófaga. [An. Mus. Hist. Nat. Montevideo] 3: 93-107, ill. ***Curran, C. H.**—New species of Diptera belonging to the genus Baccha. (Syrphidae). New species of Lepidanthrax and Parabombylius (Bombyliidae). New Diptera belonging to the genus Mesogramma (Syrphidae). [40] 403: 16pp.; 404: 7pp.; 405: 14pp. **Herms, W. B.**—Anopheline mosquito investigations in California. [Trans. 4th. Int. Cong. Ent.] 708-721, ill. ***Kröber, O.**—Die tabanidenuntergattung Phaeotabanus. (S). [34] 86: 273-300, ill. ***Kröber, O.**—Ergebnisse einer zoologischen sammelreise nach Brasilien, insbesondere das Amazonasgebiet. Tabanidae. [Ann. Naturhist. Mus. Wien] 43: 243-255, ill. ***Kröber, O.**—Nachträge zu den kleinen gattungen der südamerikanischen Tabanini. [34] 86: 248-265, ill. ***Lindner, E.**—Ergebnisse einer zoologischen sammelreise nach Brasilien, insbesondere das Amazonasgebiet. Stratiomyidae und Rhagionidae. [Ann. Naturhist. Mus. Wien] 43: 257-268, ill. **Mercier, M. L.**—Variation de certaines pièces de l' armature génitale mâle de Pollenia rudis (Calliphorinae); importance de cette variation pour la notion d'espèce chez les Myodaires supérieurs. [69] 190: 320-322, ill. **Montschadsky, A.**—Die stigmalplatten der Culicidenlarven. [89] 58: 541-636, ill. **Root, F. M.**—The present status of our knowledge of the Nyssorhynchus group of Anopheline mosquitoes. [Trans. 4th. Int. Cong. Ent.] 316-321.

COLEOPTERA.—Barnes, T. C.—An enquiry concerning the natural history of the white-pine weevil (Pissodes strobi). [Trans. 4th. Int. Cong. Ent.] 412-413. ***Brown, W. J.**—Studies in the Scarabaeidae (IV). [4] 62: 2-6. **Dobzhansky, T.**—The origin of geographical varieties in Coccinellidae. [Trans. 4th. Int. Cong. Ent.] 536. **d'Orchymont, A.**—Remarks on the morphology and geographical distribution of Neohydrophilus (Hydrophilidae), especially the American species. [Trans. 4th. Int. Cong. Ent.] 1024-1028, ill. ***Fisher, W. S.**—New West Indian Buprestidae and Cerambycidae. [4] 62: 7-11. ***Fletcher, F. C.**—Notes on Neotropical Pselaphidae, with descriptions of new species. [75] 5: 95-100. **Greeves-Carpenter, C. F.**—The

beetle family. [Nat. Mag.] 15: 171-172. **Hovasse, M. R.**—Un mode de symbiose nouvèau chez les Cochenilles. [69] 190: 322-324. **Hustache, A.**—Curculionides de la Guadeloupe. [Faune Col. Françaises] 3:165-267, ill. **Kolbe, H.**—Ueber einige übergangsformen (Transifupaussus, Manicanopaussus u. a.) zwischen den primitiven und superioren artengruppen der myrmekophilen Coleopterengattung Paussen. [60] 90:253-258.

HYMENOPTERA.—Buckle, J. W.—Croesus varus. [4] 62: 21-22. **Carpenter, F. M.**—The fossil ants of North America. [Bull. Mus. Comp. Zool. Harvard Coll.] 70: 66pp., ill. ***Cockerell, T. D. A.**—Descriptions and records of bees. [75] 5: 108-115, 156-163. **Imms, A. D.**—Observations on some parasites of Oscinella frit. [Parasitology] 22: 11-36, ill. **Kryger, J. P.**—Some remarks on the keys of the European chalcids. [Trans. 4th. Int. Cong. Ent.] 1020-1023.

SPECIAL NOTICES.—Fourth International Congress of Entomology.—Ithaca, August 1928. Vol. 2. Transactions. Containing titles of 148 papers. **Monographie der paläarktischen arten des subgenus Dystroma** (truncata-citrata-gruppe) der gattung Cidaria (Geometrid). By F. Heydemann. [Mitt. Müncher Ent. Ges.] 19: 207-302, ill. [Altho treating of the palaearctic species its monographic nature makes this paper valuable to students of other faunae].

General Catalogue of the Hemiptera. G. Horvath, General Editor. H. M. Parshley, Managing Editor. Fascicle II Mesoveliidae par Géza Horváth, M.D., Musée National Hongrois, pp. (8+) 15. Price, 50 cents. Fascicle III. Pyrrhocoridae by Roland F. Hussey, Sc.D., New York City. With bibliography by Elizabeth Sherman, A.B., Mt. Vernon, N. Y. 144 pp. Price, $1.50. Published by Smith College, Northampton, Mass., U.S.A., 1929.

The first fascicle, on the Membracidae, by Dr. W. D. Funkhouser, appeared in 1927 and was noticed in the News for October, 1927, pages 254-255, where some general information on this series will be found. Fascicle II, in the *Avant propos*, gives a history of the family Mesoveliidae as a taxonomic unit, taken from Dr. Horvath's *Monographie* of 1915. The catalog proper occupies pp. 1-7 and lists the two genera and 14 species known from the entire world today, with their geographical distribution. One genus and three species: *Mesovelia bisignata* Uhler, *M. cryptophila* Hungerford, *M. douglasensis* Hunger-

ford, are recognized from North America. Pp. 8-14 contain a bibliography.

The Introduction, pp. 3-6, of Fascicle III, contains, *inter alia*, some interesting remarks on the geographical distribution, affinities and subdivisions of this family. "About one-third of all the known [360] species and more than half the genera [43] of the Pyrrhocoridae occur in the Indo-Malayan region, which thus appears to be the primary centre of distribution of the family." It is Dr. Hussey's belief that the two subfamilies, "the Euryophthalminae and the Pyrrhocorinae, are each worthy of elevation into distinct family rank, the two thus constituting the superfamily Pyrrhocoroidea", but for the present he retains "the family Pyrrhocoridae in its standard sense". Two new tribal names, Euryophthalmini and Physopeltini, are suggested and defined (p. 5) as subdivisions of the Euryophthalminae. Page 7 gives in tabular form the Systematic Arrangement adopted under subfamilies, tribes and genera, showing the number of species of each genus in eleven geographical divisions of the earth. Thus in North America 2 subfamilies, 7 genera and 23 species are known. The catalog occupies pp. 9-106; Appendix A, genera wrongly included in the Pyrrhocoridae, pp. 107-108; Appendix B, List of the Pyrrhocoridae described under generic names now assigned to other families, together with their present nomenclature, pp. 109-110; Appendix C, List of Pyrrhocorid species transferred by various authors to genera other than those under which they appear in this catalogue, pp. 111-113. The bibliography by Miss Sherman is on pp. 114-137. Finally there are two alphabetical indexes, one to genera and higher groups and one to species, pp. 138-144.

This is a catalogue which also serves as an index to the literature of the species of Hemiptera. It is, however, basically systematic in its structure; and unfortunately such structures are subject to serious changes when the status of the species are changed on account of Revisions, Monographs, etc., which are continually being proposed. This will, in time, necessitate reprinting the text in accordance with the new arrangement, which in turn will require rewriting and resetting of the type for the extensive bibliographical references. This will not only involve expense, but will open again the chance of errors creeping in. A new method of indexing the literature of the species of insects, which will obviate this reprinting and resetting was proposed by Ezra T. Cresson, Jr., at the Fourth International Congress of Entomology.* P. P. CALVERT.

*Trans. 4th Intern. Cong. Ent., p. 484-487, (1929).

DIE WEBERKNECHTE UNGARNS von Dr. GABRIEL VON KOLOSVÁRY; 4to., 112 pages, 11 plates, 67 text figures. 1929 Szeged (Ungarn) "Studium" Verlag, Budapest IV., Múzeum-Körút 21. Text in two parallel columns on each page, Magyar and German. 38 Reichsmarks. The object of the present work, says the author, is to fill some gaps in Hungarian Zoological literature and to complete the monograph of the Hungarian spider world which Otto Herman began by his treatise on spiders. He therefore presents us with this account of the Opiliones, or daddy-longlegs. It is of interest to others than students of the Hungarian fauna by virtue of the large amount of space which it devotes to the external morphology (21 pages), internal anatomy (30 pages) and mode of life (23 pages) of these Arachnids, as contrasted with 23 pages to the faunistic part. The author claims that it contains many details lacking in C. Fr. Roewer's *Die Weberknechte der Erde* (Jena, 1923, Verlag G. Fischer) and offers several new interpretations of this group of animals, largely due to his own studies on their morphology and anatomy. The more important results of his investigations which, the author believes, he has established are: a detailed description of the various kinds of spines found on the body surface and whose function is to secrete a thickish substance which, mixed with foreign particles, serves as a mechanical protection; the function and discharge of the stink-glands; explanations of the retractile chitinous tube of the male sexual organs, of the pseudotracheal chitinous canal and of the different development of the two sorts of intestinal contents; a reconstruction of the tracheal system from microscopic preparations and a new nomenclature for the same; the modes of life with special mention of juvenile individuals. The account of the internal anatomy is based chiefly on longitudinal and transverse serial microscopic sections of *Opilio parietinus* and on reconstructions made therefrom. Descriptions of the glands of the body surface, digestive, circulatory, respiratory, muscular, nervous and reproductive systems are given. The topics treated of in the chapter on modes of life are: distribution, dwelling places, relations to environment, food, pairing, egg-laying, ontogeny, phylogeny, migration, parasites and correlation between psychic and corporeal peculiarities and the account is based entirely on the author's personal observations and experiments. The plates show, on large scale, a dorsal view of the body, a profile of the head (or of the eyes only) and a more highly enlarged chelicera for each of 22 species; the text figures illustrate principally morphological and anatomical details.—P. P. CALVERT.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Exchange—Pselaphidae and Scydmaenidae from all regions of earth, especially tropics, wanted for cash, exchange, or det: will give collectors going to tropics instructions for collecting them. F. C. Fletcher, 1766 James Ave. So., Minneapolis, Minn., U. S. A.

Exchange—South American, also Jave, Borneo, Celebes Butterflies in lots by 12, 50 or 100 monthly arrivals. Wish for revisional study all North American PARNASSIUS and ARCTIDAE, also APPATENSIS. Communicate with Mrs. Emma Kessler, 499 Manhattan Ave., New York City.

Wanted—Everes comyntas and amyntula from all parts of N. Am. by purchase or exchange for local lepid. Dr. Edwin P. Meiners, 6600 Delmar Blvd., St. Louis, Mo.

Wanted for Exchange or Determination, specimens of the genus **Eucerceris** of the Hymenoptera, tribe of Cercerini. H. A. Scullen, Department of Entomology, Oregon State Agricultural College, Corvallis, Oregon.

Mordellidae of the world wanted in exchange for North American species. Address Dr. F. J. Psota, 2434 South Crawford Avenue, Chicago, Illinois.

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